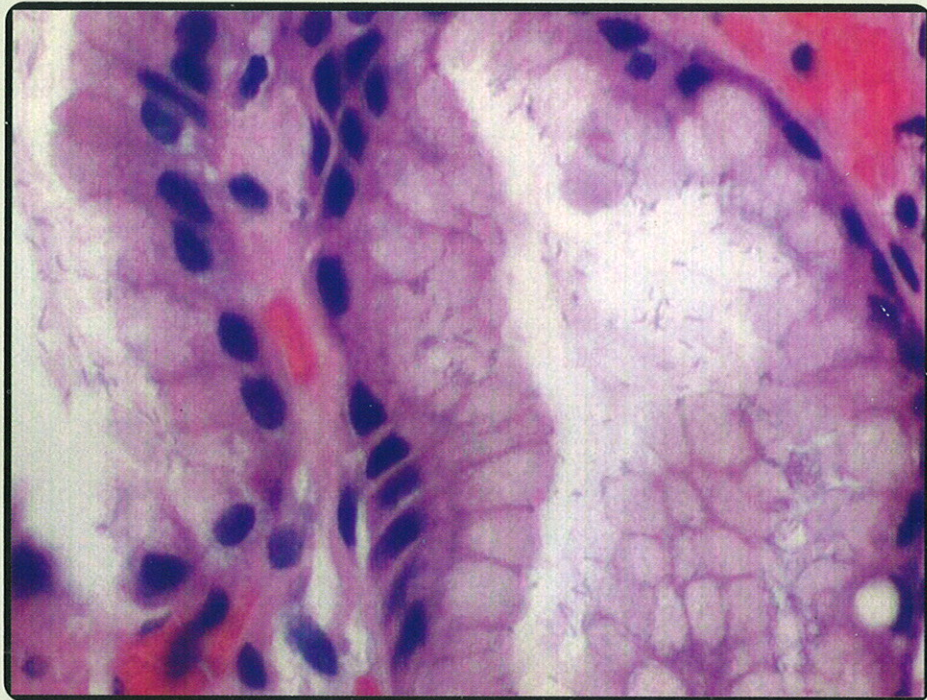


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Helicobacter pylori in a section of gastic biopsy

(Courtesy of Professor S C Peh, Department of Pathology, Faculty of Medicine, University of Malaya)

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Title page: The title page should contain a concise title of the article. It should identify all the authors, the name(s) of the institution(s) and their full addresses where the work was carried out. The initial and address of the corresponding author should also be indicated.

Abstract and Keywords: The second page should contain an abstract of about 150-200 words. It should state the purpose of the study, a brief description of the procedures employed, main findings and principal conclusions. Three to ten key words should also be listed below the Abstract.

Text: Wherever possible, the text should consist of an introduction, materials and method, results, discussion and references.

References: Number references consecutively in the order in which they are first mentioned in the text. References in the text should be indicated by a figure within parenthesis. The titles of journals in the list should be abbreviated according to the Index Medicus. Authors are responsible for the accuracy of all references. Examples of correct forms of references are given below:

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Studies on a murine model of congenital toxoplasmosis. *Parasitol* 1992; 104: 19-23.

ii) Personal author(s) of book:

Osler AG. Complement: mechanisms and functions. Englewood Cliffs: Prentice-Hall, 1976.

iii) Chapter in book:

Weinstein L, Swartz MM. Pathogenic properties of invading microorganisms. In: Sodeman WA Jr, Sodeman WA, Eds. Pathologic physiology: mechanisms of disease. Philadelphia: WB Saunders; 1974; 457-72.

Tables: Type each table on a separate sheet and number in arabic numerals. The tables should be as few and as simple as possible, with the title above and any notes or description below. Explain all abbreviations.

Figures: Graphs, drawings and photographs should be submitted as clear, glossy prints measuring 12 cm by 17 cm. Figures should be identified on the back with the title of the article and figure number (in light pencil) and an arrow to indicate the top. Legends to the figures should be submitted on a separate sheet. Explain all abbreviations and symbols used.

Letter of Consent: Submissions must be accompanied by a letter of consent, signed by **all** authors, containing the following text:

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HEALTH MANPOWER PLANNING FOR 2020 AND BEYOND: CONFRONTING THE CHALLENGES

Malaysia's Vision 2020 and Mission

Before we embark to discuss on the issue of manpower planning in the next 20 years and beyond, let's look at the nation's planned direction as outlined by the Vision 2020 of the Prime Minister which was stated 10 years ago i.e. in February 1991 as follows:

"By the year 2020, Malaysia is to be a united nation with a confident Malaysia society infused by strong moral and ethical values, living in a society that is democratic, liberal and tolerant, caring, economically just and equitable, progressive and prosperous, and in full possession of an economy that is competitive, dynamic, robust and resilient"

As healthcare providers who are always close to the society at large, this vision that was said 10 years ago may sound real, forward-thinking and optimistic to some of us but may have setbacks to skeptics as the country progressed. We are yet to see this happening in 2020 and beyond but we are confident that some of this vision will be fulfilled in the years to come.

To realize the above vision, there were 9 strategic challenges viz:

1. Strengthening national unity
2. Attitude formation
3. Fostering a mature democracy
4. Spiritual enhancement
5. Creation of a tolerant and liberal atmosphere
6. Developing a scientific and progressive world view
7. Infusing a caring society
8. Proceeding towards a more equitable society
9. Achieving prosperity.

In our healthcare paradigm, the Ministry of Health has mooted the Vision statement for health which is as follows:

"Malaysia is to be a nation of healthy individuals, families and communities, through a health system that is equitable affordable, efficient, technologically appropriate, environmentally adaptable and consumer-friendly, with emphasis on quality, innovation, health promotion and respect for human dignity, and which promotes individual responsibility and community participation towards an enhanced quality of life".

Most of us are quite familiar with this quite a mouthful vision for quite sometimes and had in fact been discussed and elaborated into the strategic planning for quality in

healthcare and the recent 8 goals in the healthcare. We believe that the vision, by the Will of God will be sustainable for the years to come.

Scenario in healthcare services

There are several facets that have to be taken into consideration in delivery of health services:

1. Changing Demographic and Disease Patterns

As Malaysia is achieving a declining infant mortality rates (41.0 per thousand population in 1970 to 8.0 per thousand in 1998) and an increasing life-expectancy (in 1970's 63 and 68 for male and female respectively to 69.3 and 74.7 years in 1998 respectively), Malaysia will be having more elderly population. It must be noted that in developed countries, about 30 to 50% of total healthcare spending will go towards the healthcare cost for the elderly who tends to develop chronic and often incurable disease. With the expected population of 33 millions in 2020, the cost of healthcare will be tremendous. One way to counter this will be to institute more disease-prevention programme at both primary and secondary healthcare levels.

Communicable diseases will be declining further especially the immunisable disease but non-communicable diseases and AIDS will continue to cause considerable morbidity and mortality.

2. Migration and Urbanization

With the population around 33 millions and the vision to be an industrialized nation, the country would then have many more currently small towns becoming big towns that provide more job opportunities to the population in various industries. The rural-urban migration may not be an issue then as almost all nearby towns have all the facilities that can offer jobs to the population. However with the larger population and job competition there would be more densely populated areas with those in the lower socio-economic profile besides those more affluent group in the community. Diseases related to stress, mental health might be more profound.

3. Shortages and Maldistribution of Expertise

As we are facing the shortages of doctors, dentists and nurses, the problem would still continue as the supply

of professionals in medical fields did not commensurate with the demand. Expanding the scope of services as expected in the future will require more staff. This has to be looked into by institutions of higher learning especially medical related schools to produce more professionals in various medical disciplines.

Currently the Ministry of Health is loosing many doctors to the private sectors - be it in the GP practices or specialist hospitals. With the heavy workloads at the urban hospitals/clinics and poor response for doctors to serve the rural areas, the attraction for them to serve the government with limited incentives and attractions as compared to the private sectors would further jeopardise the workforce in the government sector. The government universities also has to look into more intakes as the exorbitant cost of producing a doctor in the private institutions locally or overseas (around RM250,00 - RM450,000) is too expensive as compared to other courses .

4. Rising healthcare costs

It is a fact that medical-care cost is expensive and escalating all over the world as this is a discipline where much of the research and latest technology are being employed. In the US health-care cost could reach 37% of GDP by the year 2030 from around 16% GDP currently. Even though it will not be that high for our country but the yearly health budget reflects the cost implicated by this industry. That was the reason why the government is gearing towards some kind of health financing scheme in order to support the current expenditure. In Malaysia 25% of deaths is due to cardiovascular and cerebrovascular related conditions and another 25-30% is due to injuries and cancer and perinatal condition. The government is already on the right tract when IJN was established. But this is the area where lots of funds are required as the management is expensive and require a highly skilled personnels.

5. Technology

Computer technology had brought so much advancement not only in health field but also in other disciplines. In healthcare this technology has brought much reforms in patient management, medical education and also communication.

Strategy in Healthcare delivery

With the above scenario and aiming to uphold the health vision mentioned earlier the Ministry has come out with its strategic plan by having 8 Healthcare Goals of Future Health-Care System. Briefly the 8 goals comprises the following:

1. **Wellness focus** - provide services that promote individual wellness throughout life.

2. **Person Focus** - focus service on the person and ensure services are available when and where required.
3. **Informed person** - provide accurate and timely information and promote knowledge to enable a person to make informed health decision.
4. **Self-help** - empower and enable individuals and families to manage health through knowledge and skills transfer.
5. **Care provided at home or closer to home** - provide services into rural and metropolitan homes, health settings and community centres.
6. **Seamless and continuous care** - manage and integrate healthcare delivery across care setting, episodes of care and throughout life.
7. **Service tailored as much as possible** - customize services to meet individual and group needs and special circumstances.
8. **Effective, efficient and affordable services** - provide enhanced access, integration and timely delivery.

In order to implement the above goals, Telehealth is set as a major enabler in giving the healthcare to the population. The MOH has already put in place the various following programmes:

1. Lifetime Health Plan (LHP)
2. Mass customized personalized Health information and Education project (MCPHIE)
3. CME and
4. Teleconsultation

It is hoped that with the implementation of the various activities, the community will get the full benefit of modern and quality health care service.

Challenges to Health Care

The future would be an era where it revolves around information-based and knowledge-based society in a borderless global village. Peoples' values, ideas and cultures will cut across individuals, communities, states and nations. The patients who belong to this information era will be far more educated and will have greater expectations from their health care providers. They will have access to the latest information. Patients will become partners in the delivery of health care and would not be a passive recipient. Healthcare providers would have to be up to date, through in their knowledge and have to spend more time communicating with patients.

Medical care will also be influenced by the changing trend of disease patterns. New disease epidemics in the form of emerging and re-emerging infections will continue to pose public health crisis. Chronic diseases and conditions related to changing behaviors, lifestyles, and socio-economic developments, such as substance abuse,

micro-malnutrition, diabetes mellitus, cancers, stress, domestic violence, child abuse, trauma and motor vehicular accidents will continue to be present. Therefore, there is a need to improve in the management of the chronically ill and the provision of long term support to caregivers.

The following model table 1 might be of help in the disease management in the future where the population has to be involved and educated on the levels of their health. Those who are healthy has to be educated on self-care, health education and health promotion activities to enhance their quality of life and also to empower them in directing their own health. And for those with certain health conditions has to be taught on disease management, health education to their families and siblings in order to have a continuous care at all time.

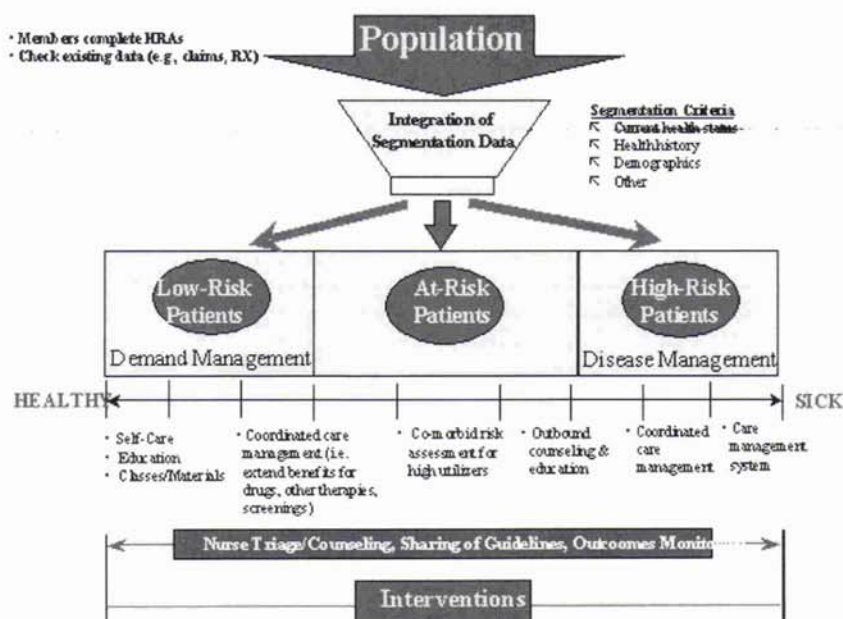
With the longevity of life, there will be an increasing need for specialized knowledge and skills for the treatment and management of the elderly, palliative care, and the need for the development of continuous care. There will also be a need for health care providers to improve and enhance the surveillance, diagnosis and treatment of infectious diseases.

The delivery of health care will be affected with escalation of health costs as a result of increasing demand for high technology medical care by both the health care providers and the population, as well as the policy of free market economy which have con-

tributed to the growth of the profit-driven private sector. This demands doctors to be more cost conscious in the provision of medical care. There is also a trend towards specialization and greater/increasing consumer's expectation of specialized care. The IT era will require doctors to be more skilled in information technology, thus a need to include this in the training of medical students.

As the trend towards recognizing the alternative therapies is growing and its being accepted as a major contribution in the society, doctors have to be aware on this increasing acceptance of alternative therapies and need to understand the hazards of alternative therapies as the strategies of these practitioners are mainly to influence on the minds of their clients about the beauty of their products and sometimes denied the existence of the allopathic medical care. Thus team approach to management and may result in the mobility of professionals across national boundaries. Health care financing involving payment of care and the issue of medical insurance will influence the way health care system will be organized. Options for health care reforms will result in restructuring of the organization. There will be issues on managed care organizations and the need for networking in the delivery of services, in our quest for greater integration of health services.

Future Direction



Source: Anderson Consulting NIMHCC 1998

Table 1. Disease Management of the future

Doctors of the future need to be committed to the Vision of Health . This has enormous implications to the medical profession, medical practice and the trainings of doctors of the future. Advances in modern medicine has brought enormous benefits to human being. However these advances can prolong life but at the expense of greater suffering, illness and higher costs.

Doctors as care providers need to understand the purpose of medicine which is to serve the community by continually improving health, health care and the quality of life of the individuals and the populations through health promotion, prevention, treatment rehabilitation within the context of available resources.

The type of doctors we need and expect

In considering the values inherent in our health vision, goals and purpose of medicine and the traditional values of our noble profession, the "core" values expected of all doctors is a positive work culture, which are a set of values, practices and behaviors shared by members of the group. This might be repeated from time to time by the officials from the Ministry of Health however this repetition is necessary as development of positive and caring attitudes is not that easy after all - it is the "Corporate Culture Initiative" since 1991 having the following elements:

- Caring
- Teamwork and
- Professionalism

In the context of caring, a doctor needs to be polite, responsive and respectful, thus providing quality caring attitude which has a human touch, sympathy and concern.

The ingredients in teamwork include being united in purpose, sense of belonging, leadership, mutual trust, accountability, skills and knowledge, creativity and innovative. Teamwork is a very important characteristic of health care. Modern medicine demands teamwork because of the complexity and specificity of care that need the expertise of various category of healthcare providers , including those outside the profession. Health workers must value, respect and appreciate the contributions of all members of the team. Thus, learning to work in teams should be an integral part of undergraduate training.

Accountability is very much a concern and inherent in our profession. With the introduction of Credentialing and Privileging activities we will be having only professionals and reliable care givers to the patients. This is reflected in our emphasis on clinical standards, outcomes, indicators, effectiveness,

appropriateness and audit. Variation in treatment modalities and outcomes will increasingly be debated. Clinical audit and other tools to ensure quality will be important in clinical practice and in the health care system. The ability to define outcomes is an important professional challenge. The use of clinical practice guidelines(CPG) is a reflection of good clinical practice and is part of care and is not an end in itself. Guidelines should have local involvement in its development and should not exclude the possibility of new management methods. Our concern and emphasis on quality must also be patient and public focused and must be clearly seen to be so. All doctors must be involved in changing and improving clinical practice and must have strong interests in research and development in view of the dynamic changes and improvements in medicine.

A doctor must also exhibit professionalism when performing his/her duties. This is exemplified by being committed, disciplined, a high standard of ethics and meeting set standards. Medical practice has a strong ethical foundation which earns the profession the respect of the community. Ethical principles are however not static and need to be continually debated and clarified with the changing technology and practice. There is greater public interest in the professional practice and standards which have increasingly come under the public scrutiny and have frequently been opened to public debate. The profession needs to participate in the debate freely and constructively. Malpractices and misbehavior among doctors will have to be addressed as the community become more aware of their rights.

Quality is another important issue and all doctors must understand the need for this. Quality must be viewed from the perspective of all stakeholders: doctors, nurses, government, funders, community, patients and others. We need to meet the expectations of the patients and the community.

The ability to communicate is also a key function of a doctor and yet problems of communication are among the common complaints made against doctors. There is a need to improve communication skills such as eliciting good medical history, anticipating and being sensitive to patient's needs. The doctor should develop negotiating skills inculcate a caring attitude. Experience from a local focus group discussion showed that doctors lack empathy and put fear in patients. They hardly put a smiling face and sometimes not able to control their emotions. They are also not sensitive to patients. In short they do not communicate and listen effectively to patients.

Advances in science and technology have empowered our doctors to diagnose, treat and rehabilitate our

patients. But it is equally important that our doctors give due emphasis on health promotion and preventive measures. It is important that the focus be on wellness rather than on disease in helping individuals to value their health and take positive measures to improve their quality of life and to adopt healthy behaviors and lifestyles.

Doctors are usually in important positions in the community. By and large they are recognized as community leaders and have an important role to play. They need to promote a balance between the individual and the community's needs and work with the community to improve their health status and quality of life. They need management skills in health care management, and training in quality assurance and health economics. Doctors should be role models in working for the good of the community.

As we plan for the futures needs of medicine, the health care delivery system and the manpower requirement, the education and training program for doctors need to be given due attention. We need to see that medical education is a continuum which include basic training, continuing medical education and continuing professional development. Knowledge base and acquisition of specific skills is the essence of being a professional and as doctors, they have an obligation to keep abreast with developments in these disciplines. In other words, doctors not only have to continue

learning, but also need to broaden their vision and to see the complete perspective of the profession in this context. Doctors need to critically appraise the latest scientific advances and appreciate its use on the patients. Doctors need to change and adapt to the knowledge base changes and widen their interest outside the realm of their profession, in the context of health of the community.

The above qualities and programmes are the basic ingredients for doctors that we want to create in the future. In term of numbers, the estimation is as in appendix I which I will not elaborate as the calculation is based on the projected norms which is in line with the OPP3 already documented.

Conclusion

In conclusion, I would again reiterate that the future doctors will face enormous pressure for change from well informed patients, public and funders, expecting doctors to perform as a medical expert, a clinical decision maker, an effective communicator, educator, humanist, healer, collaborator, gatekeeper, resource manager, an avid learner, a health advocate, a scientist, a scholar, and above all a caring person who will always say to their patients that "We doctors only helps but only God heals".

Dr. Abdul Gani bin Mohamad Din
Director of Medical Development Division
Ministry of Health, Malaysia

GERMS AND THE HUMAN STOMACH - THE *HELICOBACTER PYLORI* STORY

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Discovery of *Helicobacter pylori*

The discovery of *Helicobacter pylori*, and its association with chronic gastritis in 1983 by Warren and Marshall, ranks as one of the most important discoveries in medicine, in recent times (1,2). At the time of its discovery, no one could imagine that bacteria could exist in the human stomach with its harsh acidic milieu of a pH of 1.2. It is known, after all, that one of the basic functions of gastric acid, is precisely, to kill off any bacteria that may enter the stomach and to protect the human host from being colonized and infected by germs. We now know, that not only does *H.pylori* exist in the human stomach but it in fact, thrives in the gastric micro-environment, where it has carved out its own special ecological niche. Once infected, unless treated, infection persists life-long in the human host.

The story of *Helicobacter pylori* is one of repeated observations by several workers over a long period of time... and one of repeated "misses" as well, until its "discovery" by Warren and Marshall in 1983. In two "back to back" letters to the editor of *Lancet* (1, 2), Warren and Marshall described the presence of what they called "unidentified curved bacilli" and its "close association with active chronic gastritis". Their first definitive paper was published a year later (3), also in the *Lancet*. In an accompanying editorial, this paper was described as "an unusual paper from Western Australia concerning the unanswered questions surrounding peptic ulcer and gastritis." (4)

Germs in the human stomach have been observed for close to 100 years prior to Warren and Marshall's report (5). But they have been repeatedly observed, reported and then forgotten. With the advent of fiberoptic endoscopy, Steer and Colin-Jones in 1975, observed gram-negative bacilli in 80% of their patients with gastric ulcers (6). They thought that these bacteria were *Pseudomonas* and possibly contaminants and these bacteria were once again ignored and forgotten. Fung et al (7) in 1979, a gastroenterologist working in the Royal Perth Hospital, Australia, again observed bacteria in their study entitled "Endoscopic, histological and ultrastructural correlations in chronic gastritis". They reported their findings in the *American Journal of Gastroenterology* but to their subsequent chagrin, only made a passing reference to the observation with no comment on their possible clinical significance. They

(This article is the write-up of Professor Dato' KL Goh's "Syarahan Perdana", Professorial lecture delivered on 5th November 1999.)

noted that many of these bacteria, although abutting directly on to the plasmalemma of the epithelial cell, were never seen within the cell and were therefore assumed to be of little significance.

Robin Warren, a pathologist working, ironically, in the same hospital as Fung in Perth, independently observed the presence of these bacteria in 1979 (Fig.1 & 2). In his memoirs (8), Dr Warren recalled "In June 1979, the early days of *Helicobacter pylori* began for me. A biopsy showed severe active chronic gastritis and I saw an unusual blue line on the surface. With higher magnification I thought I could see numerous small bacilli, closely adherent to the epithelium. My colleagues did not agree until a Warthin Starry stain was very successful and showed vast numbers of bacteria."

Barry Marshall's involvement in the *Helicobacter pylori* story was entirely serendipitous. In Robin Warren's words: "I was almost ready to publish my findings in 1981 when I met Barry Marshall, who asked to see my work. He was the gastroenterology registrar and was expected to publish a paper. Dr Marshall did not like one suggested project, so someone told him to see "that pathologist who was trying to make gastritis into a bacterial infection"(8). The rest is history. Barry Marshall completed his Gastroenterology training in Perth, Australia and subsequently took up a job as Assistant Professor at the University of Virginia, Charlottesville, and USA where he continued with numerous important studies on *Helicobacter pylori*. Barry Marshall has now returned to Perth and is Clinical Professor of Medicine at the University of Western Australia. Robin Warren has retired and is Emeritus Professor of Pathology at the same University.

Nomenclature

The new bacterium closely resembled a campylobacter and Marshall and Warren initially called it a pyloric campylobacter (3). The name *Campylobacter pyloridis* was proposed by Marshall et al in 1984 (9). Although its flagellar characteristics were not that of campylobacter, the name was ratified in 1985 (10). Hartmann and von Graevenitz (11), however pointed out that the name pyloridis was grammatically incor-

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rect and that it should be change to pylori. Marshall and Goodwin duly revised the name to *C. pylori* (12) in 1987. Ultrastructurally it had greater affinities to the genus *Spirillum* than to *Campylobacter* and Jones *et al* (13) observed that there were insufficient data to place these bacteria in their exact taxonomic position. Finally in 1989, Goodwin *et al* (14) proposed the establishment of a new genus called *Helicobacter* and that *C. pylori* be transferred to the genus as *H. pylori*

***H. pylori* the pathogen**

H. pylori is the most common bacterial infection in the world today. It is the major cause of peptic ulcers and an uncommon lymphoma called "maltoma" (lymphoma of gastric mucosal associated lymphoid tissue). It plays a critical role in carcinogenesis of the stomach and is implicated in the pathogenesis of at least, a subset of patients with non-ulcer dyspepsia.

H.pylori is a true human pathogen. That *Helicobacter pylori* is the cause of histological gastritis is now proven beyond doubt. *H. pylori* is always present when active superficial gastritis is present. When *H. pylori* is eradicated, gastritis resolves. Koch's postulates have been proven, with Dr Barry Marshall infecting himself with *H. pylori*, developing gastritis and symptoms of acute dyspepsia. He had treatment with successful eradication of the bacteria and resolution of gastritis (15). Dr Arthur Morris from New Zealand, repeated the same experiment with similar disease outcome except it took him several years before he was finally cured! (16). *H. pylori* is also not found in other types of gastritis such as autoimmune, lymphocytic and bile reflux gastritis indicating that it is not merely a commensal colonizing a damaged mucosa. The association of chronic gastritis with peptic ulcer had been known for a long time, before the discovery of *H. pylori*. But the association between the two was not clear until the discovery of the association between *H.pylori* and gastritis.

Research into *H. pylori* infection

While the Royal Perth Hospital will always remains the home of *H.pylori*, many groups around the world were more involved in scientific research in gastric diseases at that time and were quick to jump into *H. pylori* research. Professor Colm O'Morain and his colleagues in Dublin, Ireland were the first to report on the decreased incidence of recurrent ulcers with *H.pylori* eradication in 1987 (17). This was an important observation and again it was the journal, *Lancet* which published the paper. In Amsterdam, Guido Tytgat, an eminent gastroenterologist, has been in the forefront of gastrointestinal research since the early 70's when he became Professor and Head of the Department of Gastroenterology at the Academic Medical Center, University of Amsterdam. His group pushed very hard and quickly

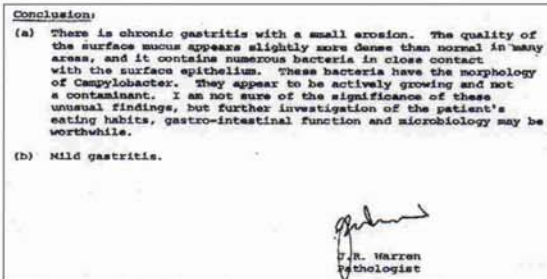


Figure 1. Robin Warren's original histopathology report, 1979 (reprinted with kind permission from Professor JR Warren)

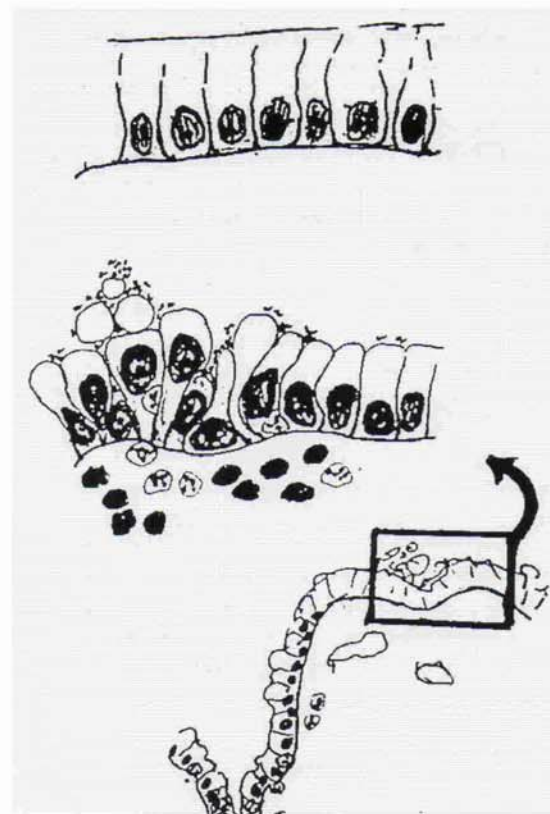


Figure 2. A sketch by Robin Warren of a microscopic section of a gastric biopsy showing *H.pylori*, 1979. (Reprinted with kind permission from Professor JR Warren)

in *H.pylori* research and in 1990 published their paper entitled "Cure of duodenal ulcer associated with eradication of *Helicobacter pylori*" in the *Lancet* (18). In an earlier paper in 1989 with Eric Rauws as first author, Tytgat and colleagues were the first to describe resolution of gastritis on long term follow-up following successful *H.pylori* eradication (19).

***H. pylori* and peptic ulcers**

Many studies have now supported these early findings and we now know that eradication of the bacteria re-

sults in abolition of relapse of peptic ulcer disease. The older textbooks of medicine frequently state that "duodenal ulcer disease is a chronic relapsing disease which will eventually burn out with time". This is no longer true as we can now cure the disease. This is indeed a dramatic and remarkable discovery in medicine. With the great impetus to treat the infection world wide, it is not impossible to imagine that in the not too distant future, peptic ulcer disease may become a disease we read about rather than treat!

Observations of a high prevalence of *H. pylori* in patients with gastric and duodenal ulcers have been universal. We have shown in one of our studies that *H. pylori* eradication alone without continued conventional ulcer treatment, resulted in healing of ulcers (20). Zheng and colleagues (21) from China and Lam and colleagues (22) from Hong Kong, have demonstrated ulcer healing with antibiotics alone. Other studies have also shown that *H. pylori* infection preceded ulcer disease, temporally, thus making it biologically plausible that *H. pylori* is aetiologically related to ulcer disease.

***H. pylori* and dyspepsia**

For a while it became a norm to attribute every disease of the stomach to *H. pylori*. Non-ulcer dyspepsia (NUD) has always been a difficult clinical problem. But the causal association of this syndrome with *H. pylori* has not been established. NUD studies are difficult to perform and fraught with pitfalls. *H. pylori* has not been shown to be more common in NUD patients compared to healthy controls, there are no specific *H. pylori* related dyspeptic symptoms, there are no clear-cut pathogenic mechanisms by which *H. pylori* infection can result in dyspepsia and eradication studies have not consistently resulted in improvement in symptoms.

***H. pylori* and gastric cancer**

Current interest and "anxiety" is focussed on the role of *H. pylori* in gastric carcinogenesis. Ecological comparisons have shown that areas with high rate of gastric cancers were also areas with a high prevalence of *H. pylori*. Compelling examples can be seen in the South American countries and in certain regions in China. The first strong evidence supporting the role of *H. pylori* in gastric carcinogenesis came about in 1991. Abraham Nomura and colleagues (23) from Hawaii published results of a large nested case-control study. In this study, a group of Japanese American men who were conscripted into the military in 1942, a year after the Pearl Harbor bombing were studied. In the 1960's an extensive health survey was carried out on these men who were born between 1900 and 1919 and 8000 subjects had blood samples taken. Between 1968 and 1989, 137 of this group of men had developed gastric

cancer. Nomura and colleagues focussed on a group of 109 cancer patients and studied a matched group of healthy subjects from this cohort. They found that those who were *H. pylori* positive (on bloods taken 20 years previously) were at a six-fold increased risk of developing gastric cancer. Similar studies were performed by Julie Parsonnet and her group from Stanford (24) and David Forman of the Imperial Cancer Research Fund in London (25). In both of these studies, an increased risk of cancer in the presence of *H. pylori* infection was also noted. Pelayo Correa in 1992 (26), modified and proposed a model of human gastric carcinogenesis as a multi-step, multifactorial process with *H. pylori* infection as the initiating event. In June 1994, the International Agency for Research in Cancer, an arm of the World Health Organisation declared *H. pylori* as a Class I (definite) carcinogen (27).

Studies at the University Hospital, Kuala Lumpur

The news of the discovery of *H. pylori* and its possible clinical significance did not come with a "bang". In fact, for several years following its discovery, doctors continued to view it with great skepticism. We started our work at the University Hospital quite modestly, in 1985. At that time, *H. pylori* was diagnosed histologically. A preliminary report was presented at the Annual Society of Pathology Conference in 1987 (28) and I subsequently, presented our results on a larger group of patients at the Malaysia Singapore Congress in 1987 (29). Our initial observations on racial differences were published as a full paper in 1990 (30) in the Journal of Gastroenterology and Hepatology at the same time as JY Kang and colleagues (31) from Singapore had their report published in the Gut. We performed a painstaking trial on non-ulcer dyspepsia and *H. pylori* in 1988-89 and were rewarded with its publication in the Scandinavian J Gastroenterology in 1991 (32). For many years, this paper was widely quoted. A subsequent paper on gastric emptying and non-ulcer dyspepsia has also been published (33).

In 1990, we were performing clinical trials with the new acid-suppressing drug omeprazole. We had then started to perform routine urease tests (for *H. pylori* infection) on gastric biopsies of all patients undergoing endoscopy. I observed that patients who were treated with omeprazole, always tested negative with the urease test. ASTRA Pharmaceuticals (makers of the drug, omeprazole) were skeptical of the effect of their drug on *H. pylori*, although preliminary reports from Europe had already been published. Together with my colleagues, Pitre Anderson and KK Tan, we sent a letter to the American Journal of Gastroenterology and entitled it "Omeprazole kills *H. pylori*". Martin Floch, who was editor of the journal at that time, accepted

the letter but insisted that we change the title to "Omeprazole may kill *H.pylori*"! (34). Again, the discovery of the effect of omeprazole on *H.pylori* was completely serendipitous. Proton-pump inhibitors have now become the cornerstone of treatment of *H.pylori* infection. In combination with antibiotics it has proven to be highly efficacious. We published a definitive paper in 1994 in the American Journal of Gastroenterology, entitled "Omeprazole 40mg combined with amoxicillin alone or with amoxicillin and metronidazole in the eradication of *Helicobacter pylori*" (35). Since then, our GI research team has gone on to perform numerous clinical trials testing various combinations of drugs on more than 1000 patients with *H.pylori* infection. Our observations have contributed greatly to the understanding of not just the efficacy of drugs but of ulcer healing, cost-effectiveness of treatment and bacterial resistance to antibiotics particularly in the local context.

I presented our paper on zero reinfection rate at the American Digestive Disease Week (DDW) in 1995 in San Diego (36) and it attracted much attention as most workers in the Western world were skeptical that treatment was worthwhile in areas of the world where there were a high prevalence of *H. pylori* and presumably a high reinfection rate. Our definitive paper on reinfection was subsequently published in the European Journal of Gastroenterology and Hepatology (37) and subsequently several reports from the Asian-Pacific area have supported our observations. We have now followed our initial cohort of patients endoscopically, for more than 5 years and we have continued to observe a very low reinfection rate. Additionally with reports of occurrence of gastroesophageal reflux (GORD) following eradication, we looked specifically for occurrence of new symptoms particularly those related to GORD and for endoscopic evidence of oesophagitis. In a report at the American Digestive Disease Week 1999, we observed extremely low incidence of oesophagitis and GORD symptoms amongst our patients (38).

Observations of the low prevalence of peptic ulcer disease and cancer of the stomach amongst Malays (compared to the Chinese) have been known since the 1960s. In our early observations and report in 1990 (30) as well as in Kang *et al's* (31) report of the same year, a low prevalence of *H. pylori* amongst Malays was reported. Uyub and colleagues (39) in 1994 reported on an inordinately low prevalence of *H. pylori* amongst Kelantanese Malays. As part of my Doctor of Medicine thesis (40), serum from several parts of the country were tested for *H. pylori* antibodies. In keeping with our earlier notion, Malays consistently had lower prevalence rates compared to the other major races: Indians and Chinese. In areas of high prevalence for example in Kota Kinabalu, Sabah, the prevalence in Malays is rela-

tively higher but still the lower compared to the other racial groups. In a large prospective endoscopy survey, performed on 1060 patients, at the University Hospital, Chinese race and Indian race were found to be significant independent risk factors, following multivariate analysis using multiple logistic regression analysis (41).

The racial cohort phenomenon

The marked differences between the three major races particularly in West Malaysia points to a racial cohort phenomenon (42). Our hypothesis of a *racial cohort* phenomenon is based on the presumption that Chinese and Indians started off originally with a large reservoir of the infection, at the time of immigration to Malaysia more than 100 years ago. This is suggested by the high prevalence of *H.pylori* in their countries of origin. The Malays, on the other hand are a relatively, "*H. pylori* free" race. The fact that the infection is confined to a racial cohort suggests that transmission of infection require close contact, as occurs within families and within racial groups. While there is many casual social interactions between races, it is pertinent to note that intermarriages between races are not commonplace in our local population. Spread of infection appears to have taken place within rather than between racial groups. The racial differences in *H. pylori* prevalence, are further underlined in a serological study in Malaysian children that we have performed, where Chinese and Indian children, were already found to have significantly higher *H.pylori* prevalence at a very young age compared to Malays (43).

Differences in incidence rates of peptic ulcer disease and cancer of the stomach between races are further intriguing (44). While Indians have as much *H.pylori* infection as Chinese does, the incidence of peptic ulcer and cancer of stomach are much lower than for Chinese. Herein lies the "Indian enigma". The differences in clinical outcome may be related to differences in infecting strains or differences in the host particularly with respect to acid-secreting capacity or differences in environmental factors between the races. A multiracial society, where three major Asian races live side by side, provides a living experimental model to further understand mechanisms of disease causation associated with *H. pylori* infection.

Lessons form the *H. pylori* story

The *H. pylori* story has taught us several important lessons: the cause of two important diseases-peptic ulcers and gastric cancer arose from simple observations and unsophisticated clinical studies. Lack of understanding of an observation does not mean insignificance of that observation and should instead be a

spur for more research. A disease is not conquered until its underlying cause is discovered, however well one may be able to control it - the case in point being peptic ulcer disease.

The Future

H.pylori research has now moved on into an accelerated new phase with the discovery of its exact genomic sequence (45). *H. pylori* is now a major interest of molecular biologists, where exciting work is being done to identify "good" strains and bad "strains". Work continues to understand further, the host immune response and to identify environmental factors, which may modulate disease outcome. Much work has been done on the development of a therapeutic vaccine and new targets for therapy. Further work has also identified not just non-*H.pylori* gastric bacteria but *Helicobacter* species in other parts of the gastrointestinal tract and in the biliary tree

Internationally, *H. pylori* is a growth industry for several pharmaceutical companies. "Helicobacter" is a Journal and *H. pylori* has its own international conferences. In 1998, the Malaysian Society of Gastroenterology and Hepatology hosted the 2nd Western Pacific *Helicobacter* Congress in Kota Kinabalu, Sabah, which turned out to be a very successful meeting, beyond our expectations. Several international Consensus panels in North America, Europe and Asia have been convened and guidelines for diagnosis and treatment drew up. The Malaysian Society of Gastroenterology and Hepatology Working Party Report on the Management of *Helicobacter pylori* infection was published in 1998 (46).

Epilogue

For me, my interest in *H. pylori* has stretched over 15 years. In this time it has provided me with the opportunity, not just for a scientific endeavor but also an opportunity to mature academically and professionally. I have worked for and obtained a Doctoral degree from the University of Malaya and I have learnt many research methods, which will now be invaluable, particularly to younger clinical researchers. My interest in *H. pylori* and gastric diseases continues with further work in both the laboratory and in the clinical arena.

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TRANSMISSION OF HELICOBACTER PYLORI

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Helicobacter pylori infection is a common world-wide phenomenon that has been shown to be responsible for gastritis, between 80-95% of peptic ulcer disease (1), and has been implicated in the pathogenesis of both gastric cancer and mucosa associated lymphoid tissue lymphoma (2). Effective public health interventions to reduce the incidence of infection are dependent on a good understanding of those most at risk of acquisition and of the sources and routes of transmission.

Epidemiology

Considerable evidence suggests that *H. pylori* acquisition occurs mainly in early childhood (3-5). Acquisition of *H. pylori* has been shown to be infrequent in adulthood, even when only one adult among spouses is infected (5). In developing countries, infection occurs more frequently in children below 10 years of age with prevalences of 70-90% in some regions (4). Several follow up studies of children in developed countries have shown an increased risk of infection and re-infection below 5 years of age, but not in older children (6-7). The seroprevalences of *H. pylori* in adults in developed countries have however been noted to be higher than in children due to a 'cohort effect'. This is believed to be explained by the lower socioeconomic conditions during childhood of older people, resulting in a higher incidence of infection when they were young, rather than the additional years during which they might have acquired the infection. A birth cohort study from Japan, for example, showed that infection was most prevalent in those born during the post-war deprivation era (8). Further links between *H. pylori* infection, lower socioeconomic status and ethnic groups from high prevalence regions are well documented (3,4). Although less common, acute infection can also occur in adults, particularly from occupational exposure (Gastroenterologists, Endoscopy staff, etc.) (9).

Mode of transmission

Due to the limited success in culturing *H. pylori* in any other tissue apart from the human stomach, the exact path of transmission from one human stomach has been difficult to prove (5,10). Although abundant evidence points towards overcrowding and familial clustering, especially in a lower socioeconomic groups, as risk factors for *H. pylori* infection, few have been able to clearly discriminate between person-to-person spread from a common source exposure (10-12).

Waterborne and zoonotic

H. pylori has been identified in drinking water using polymerase chain reaction (PCR) amplification (10) and has been linked epidemiologically with municipal water supply in a study in Peru (13) and with uncooked vegetables treated with sewage in Chile (14). However, confounding variables such as population density and overcrowding were not considered (12) in the analyses of these studies and similar findings have not been reproduced elsewhere (15). Similarly, although *H. pylori* has been isolated in non-human mammals (16), evidence for zoonotic transmission is lacking. Previous population studies have shown little or no association between domestic pet ownership and *H. pylori* seroprevalence (17,18). Results from observations in abattoir workers have been conflicting. Investigations on abattoir workers in Bologna, Italy showed a high prevalence of infection amongst manual workers compared with clerical staff (19) while no such difference was observed in a similar study in Brazil (20). Attempts at detecting *H. pylori* by serology and microbiology also proved unsuccessful (20).

Person-to-person

Although a common external source of infection cannot be ruled out, it is most likely that *H. pylori* transmission occurs via a person-to-person route. Large epidemiological studies have shown a strong association of *H. pylori* prevalence with overcrowding (odds ratio 2.15), regular sharing of beds during childhood (odds ratio 2.13) (11) and seroprevalence amongst parents (odds ratio 2.48), especially mothers (12). As children in most societies spend a longer period of their earlier years with their mothers, the latter evidence lends more support for a parent-child route of transmission. In addition, DNA typing has shown that the same strain of bacteria is often found within members of a family (21).

More recently, evidence of a child-child spread of infection has been shown in a population with large families. An increased birth order, reduced birth spacing, and the infection status of siblings were shown to

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influence the odds of prevalent *H. pylori* infection independently of the number of children at home (22). However, it has been suggested that this route may be only applicable in nations with large families and less so in the developed countries, where families tend to be smaller (23). Indeed recent data from a study in a developed country has laid more importance to intrafamilial spread over extraneous child-to-child contact (37). This is further supported by a large seroepidemiological study of a multi-racial population in Malaysia, where the different main races have remained fairly separate and distinct, despite co-existing for several generations. The clear 'racial cohort' phenomenon of *H. pylori* prevalence have led the authors to postulate that the spread of infection appears to have taken place within rather than between racial groups (38).

Iatrogenic transfer of *H. pylori* from stomach to stomach has been documented (mainly through endoscopy equipment and gastric probes) (24,25), but this is clearly not the normal route. The main routes of transmission from an infected person to an uninfected individual has been suggested to be through the faeces, saliva and vomitus (10).

Routes of transmission

The faecal-oral route

The fact that *H. pylori* appears to be acquired in early childhood and in areas of poor sanitation would concur with a faecal-oral pathway, but the evidence is not quite conclusive. *H. pylori* DNA has been detected in faeces (26), but they have not been shown to be viable and culture has proved difficult (27). Furthermore, it has been postulated that if the faecal-oral route was a main method of transmission of *H. pylori*, it would be expected that patterns of prevalence similar to Hepatitis A would be found. Although this has been reported in Thailand and South Africa (10), this has not been the case in (mainly) European countries (28, 29).

The oral-oral route

The oral cavity has been suggested as a potential reservoir for *H. pylori* due to transportation of viable organisms to this area from the regurgitation of gastric secretions. Although earlier studies had isolated *H. pylori* from gingival crevices and dental plaques in patients with positive gastric biopsies (30), it was later suggested that contamination might have occurred during withdrawal of the endoscope (31). Indeed when the element of possible contamination was removed, very few patients with gastric *H. pylori* colonisation also had the organism present in the oral cavity (31, 32). Further evidence for an oral-oral route has been suggested by the higher prevalence of *H. pylori* in Chinese-Australians using chopsticks compared to those who did not, after ad-

justment for confounding variables (33). However, this finding could simply have reflected greater contact with Chinese immigrants who have a higher probability of *H. pylori* infection than those born in Australia (5, 10). Animal studies favouring an oral-oral to the faecal-oral route of transmission have also been reported. In two particular examples, beagles, who had a tendency to lick one another extensively, clearly transmitted bacteria (including *H. pylori*) from infected to non-infected puppies (34). This was in contrast to coprophagic animals with little oral-oral contact like rats and mice that did not show such a transmission. Despite this, similar findings have been lacking in particular groups of people, such as dentists and those with higher numbers of sexual partners (10).

The gastric-oral route

Transmission via vomitus has been suggested as a possibility and would fit with the period of acquisition of the infection, due to a high rate of reflux and vomiting during childhood years. The higher association of *H. pylori* infection in children and their mothers but not with their fathers (10-12) also supports this. Although the association may be simply be due to close proximity, it is possible for transmission to occur when the child vomits with the parent most likely to clean up. Despite limited evidence for *H. pylori* survival in an acid-rich environment without urea (35), it has been postulated that the period of hypochlorhydria likely to accompany acute infection may aid survival of the bacterium outside the stomach by creating an environment in which vomitus lacking in acid is produced (36).

Conclusion

Transmission of *H. pylori* appears to occur through more than one pathway, which varies from one population to another. There is strong evidence for a person-to-person spread occurring during childhood, but the exact mode of transmission remains inconclusive at the present time.

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UNDERSTANDING GORD: DEFINITION, DIAGNOSIS AND CLINICAL EVALUATION- A CRITICAL APPRAISAL

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ABSTRACT: Gastroesophageal reflux disease (GORD) is a common disease which affects a significant proportion of the adult population and impacts adversely of the quality of life of patients. In a small proportion of patients, GORD results in serious complications. The full spectrum of GORD must be recognized: reflux oesophagitis or erosive GORD, non-erosive oesophageal disease (NERD) and extra-oesophageal disease including chronic asthma, laryngitis, unexplained chronic cough and non-cardiac chest pains. Although traditionally, GORD is diagnosed based on the findings of classical oesophagitis on endoscopy, it has to be emphasized that a larger proportion of patients have NERD, where the diagnosis is made based solely on patients' symptoms. Endoscopy is important in the diagnosis of oesophagitis and its complications. However, the description of endoscopic findings should be clear and based on a standard classification such that reports can be mutually interpreted between endoscopists. The L.A. classification is currently, the best method of grading of oesophagitis in GORD. (JUMMEC 2001; 1:15-19)

Introduction

Gastroesophageal reflux disease (GORD) is one of the most common upper gastrointestinal diseases in the West. Symptoms of GORD have been reported to occur weekly in up to 20% of an adult American population (1). In a survey in the U.K, 28.7% of the respondents had gastroesophageal reflux symptoms of either heartburn or acid regurgitation on more than six occasions in the previous year (2). Although good epidemiological studies on the Asian population are sparse, there is persuasive evidence that the disease, which has hitherto, been thought to be uncommon in Asia, is also increasing in prevalence (3). GORD symptoms are chronic and troublesome and often significantly impair the patient's quality of life (4). A small percentage of patients develop serious complications and GORD predisposes a patients to develop adenocarcinoma of the lower oesophagus (5).

Definition of GORD

GORD can be broadly defined as symptoms combined with or without esophageal mucosal damage that occurs as a consequence of reflux of gastric contents. As gastroesophageal reflux is physiological, there have been attempts to define GORD by the abnormal frequency of refluxes. However the demarcation between normal and pathological reflux remains undefined (6). The Genval Workshop formally defined GORD to include "all individuals who are exposed to the risk of physical

complications from gastroesophageal reflux or who experience clinically significant impairment of health related well being (quality of life) due to refluxed related symptoms, after adequate reassurance of the benign nature of their symptoms" (7). The workshop further considered heartburn occurring two or more days in a week as likely to impair the patients quality of life (7).

Spectrum of disease

"Classical" GORD is represented by erosive oesophagitis or what we refer to as erosive GORD. What is less well known but important to recognize, is the large group of patients with endoscopy -negative or non-erosive reflux disease (NERD) which may represent up to 70% of patients with GORD (8,9). NERD has been defined as the presence of typical symptoms of GORD caused by intraoesophageal acid, in the absence of visible mucosal injury at endoscopy (10).

Conversely, diagnosis based on symptoms solely, also underestimates the true prevalence of GORD. Patients who are relatively asymptomatic may have endoscopic evidence of severe oesophagitis and this has been reported in up to 30% of patients in one study (11). Non-cardiac chest pains, asthma, unexplained chronic cough, laryngitis and hoarseness of voice have all been

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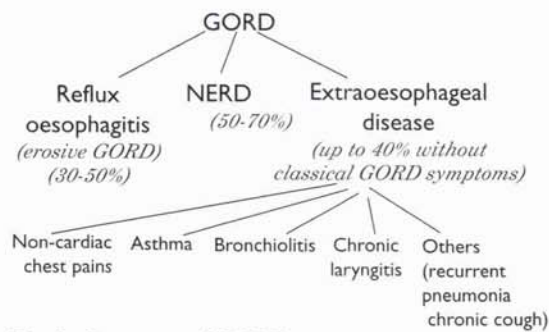


Fig.1. Spectrum of GORD

associated with GORD and many of these patients may lack the concomitant symptoms of heartburn or acid regurgitation.

Classical symptoms of GORD

The classical symptoms of GORD are "heartburn" and acid regurgitation. These symptoms often occur together in the same patient. The term heartburn itself may not be well understood by patients and particularly in non-English speaking population, it may be necessary to describe it in words e.g. "a burning feeling rising from the stomach or lower chest and rising up towards the neck". Heartburn is typically provoked by meals, especially those containing fatty or highly spice food or by bending, straining or lying down. Acid regurgitation is a sensation of acid "coming up the throat and into the mouth". Regurgitated material is usually tasted and re-swallowed but is sometimes so voluminous and can be mistaken for vomiting. Some patients may experience regurgitation as their predominant symptom. When heartburn and acid regurgitation are present as predominant symptoms they have a high positive predictive value for the diagnosis of GORD (12).

Pathogenesis of heartburn in erosive GORD and NERD

Heartburn is the classic symptom of GORD with or without mucosal injury. In patients with erosive GORD, stimulation of sensory pathways by acid refluxate or inflammatory mediators is thought to be the cause of the symptoms. There is evidence for the presence of both spinal and vagal nerve terminals within the mucosa and muscle layer of the oesophagus (13). In animal and human studies, dilatation of intercellular spaces has been noted in acid-exposed tissues and this suggests that patients with reflux disease may have increase paracellular permeability in the esophageal epithelium (14,15). Sensory neurons in the esophageal epithelium are found within intercellular spaces and the increase in paracellular permeability may explain the heartburn symptoms.

In NERD, the mechanisms underlying the generation of pain is less clear. While acid is critical to the generation of pain in heartburn, 33-50% of patients with NERD will have normal pH monitoring (12,16,17) indicating that physiological acid exposure may be sufficient to cause typical symptoms of heartburn. This suggests that the oesophageal mucosa in NERD patients may be hypersensitive. It has been shown that patients with NERD although having slightly higher mean acid exposure compared to normal subjects, have significantly less acid exposure compared to patients with erosive GORD patients (18,19). It has further been noted that, more erosive GORD patients will have a positive symptom index (percentage of symptoms correlating with acid reflux events > 50%) compared to NERD patients (20).

Diagnosis of GORD

The difficulty with diagnosing GORD is the lack of a gold standard. Traditionally the presence of endoscopically identifiable lesions in the lower esophagus or reflux oesophagitis have been used to make the diagnosis but this, as we have noted earlier, only identifies a proportion of patients with GORD. The larger segment of patients with NERD would be missed out. 24 pH measurement has improved the diagnosis of GORD particularly if symptoms are correlated with reflux episodes (symptom index). But the sensitivity of this test for GORD remains low. Up to a third of patients with GORD have a normal pH study (21-24). mptoms have been used in the diagnosis and validated structured questionnaires have been employed in the diagnosis of GORD (19,20). More recently, the use of potent acid suppression with PPIs specifically omeprazole has given rise to the so-called 'omeprazole test' for the diagnosis of GORD (27-29).

Barium studies have essentially been found to have little use in the diagnosis of GORD. A finding of reflux of gastric contents with abdominal pressure is unreliable and inconsistent and if present does not necessarily indicate pathological reflux. The Bernstein's test, where dilute hydrochloric acid is instilled via a naso-gastric tube onto the lower oesophagus merely demonstrates sensitivity of the lower oesophagus and is no longer used in clinical practice.

Clinical evaluation of GORD

A careful clinical assessment is important to exclude alarm symptoms of dysphagia, bleeding or weight loss in patients presenting with GORD. Amongst untreated patients in primary care, it is estimated 5% of patients have severe oesophagitis with complications (1,30).

While heartburn and acid regurgitation may occur as the only and predominant symptoms they are often

associated with other abdominal complaints. Although the Rome II Working Party (31) has now, excluded heartburn as a symptom in their definition of dyspepsia, considerable overlap still exists between dyspepsia, GORD and even irritable bowel syndrome. Many patients with functional dyspepsia have heartburn as an additional complaint (1,32). These symptoms may be mild or infrequent. In a study on patients with functional dyspepsia, where 24 pH monitoring studies were used, a proportion of patients were found to have in fact, GORD (33).

Role of endoscopy

Endoscopy is useful in diagnosing changes of oesophagitis although in more than 50% of patients endoscopy may be normal. Endoscopy is particularly indicated when alarm symptoms are present: bleeding, dysphagia and loss of weight. While mucosal breaks: erosions and ulcers are indicative of significant reflux disease, redness of the mucosa may be an unreliable finding. Many classifications of oesophagitis have been proposed and used. The Savary-Miller endoscopic classification system has been used widely in the past but interpretation of the minor grades have been highly variable (34) (Table 1). In an attempt to overcome the inconsistencies of the Savary Miller classification, the LA classification was proposed by a consensus group in 1994 (35) where a definite breach in the oesophageal mucosa must be observed before a diagnosis of oesophagitis is made. The "L.A." (Los Angeles) classification (Table 2) describes four grades of oesophagitis severity (A to D), based on the extent of oesophageal lesions known as 'mucosal breaks'. The LA classification does not however, describe the features of severe or complicated oesophagitis in detail. Armstrong *et al* (36) proposed a new system referred to as the "MUSE" system which overcomes this deficiency. The "MUSE" (metaplasia (M), ulceration (U), stricturing (S) and erosion (E)) classification provides clear definitions of the relevant endoscopic features. For endoscopy to be meaningful, it is imperative that a standard, reproducible and reliably interpreted classification of reflux oesophagitis is used.

Natural history of erosive GORD and NERD

GORD is a disease that persists for a long time, if not for life. There will be periods of remissions and exacerbations as the disease waxes and wanes. The natural history of both erosive GORD and NERD has not been well studied. It appears that patients continue to have the same grade of oesophagitis as when diagnosed initially with only a small percentage progressing to more severe grades and few patients with NERD go on to

Table 1. Savary Miller Classification

Stage I	Red patches or streaks proximal to the squamo-columnar junction
Stage II	Confluent but not circumferential erosions or areas of mucosal damage
Stage III	Circumferential mucosal damage
Stage IVa	One or several oesophageal ulcers
Stage IV b	Presence of stricture

Table 2. The Los Angeles Classification System for the endoscopic assessment of oesophagitis

Grade	Definition
A	One or more mucosal breaks no longer than 5 mm, none of which extends between the tops of the mucosal folds
B	One or more mucosal breaks more than 5 mm long, none of which extends between the tops of the mucosal folds
C	Mucosal breaks that extends between the tops of two or more mucosal folds, but which involve less than 75% of the oesophageal circumference
D	Mucosal breaks which involve at least 75% of the oesophageal circumference

develop erosions (37-41). Apart from impairment of health because of troublesome symptoms, the greatest anxiety with GORD is the development of consequences of severe oesophagitis: stricture formation, Barrett's oesophagus and adenocarcinoma. It is estimated that complications in patients referred to hospital with erosive oesophagitis are stricture in 4-20%, ulceration in 2-7%, hemorrhage in <2% and Barrett's oesophagus in 10-15%. It is further shown that up to 10% of patients will present with oesophageal stricture without a prior diagnosis of reflux oesophagitis (42-44).

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CISPLATIN AND VINOURELBINE IN THE TREATMENT OF LOCALLY ADVANCED AND METASTATIC NON-SMALL CELL LUNG CANCER

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ABSTRACT: From August 1999 to January 2001, twelve chemotherapy naive patients with locally advanced and metastatic non-small cell lung cancer (NSCLC) in our hospital received vinorelbine and cisplatin. Ten patients had stage IV disease while two had stage III disease. Patients' performance status (PS) were as follows: four had PS 1, six had PS 2, and one each PS 3 and 4. A total of 46 cycles were given as scheduled.

Only major haematological toxicities were noted; one patient each with Grade 3 anaemia, Grade 3 and Grade 4 leucopenia, two had Grade 3 neutropenia and 5 had Grade 4 neutropenia without associated mortality. Three patients had Grade 3 alopecia and one had Grade 3 phlebitis. After three cycles, three patients demonstrated partial response and two had stable disease. For the four patients who completed 6 cycles, two demonstrated stable disease and two partial response. Symptom improvement was reported in all but one patient. Performance status was better in four, stable in six but declined in two patients. In conclusion, in patients with locally advanced and metastatic NSCLC, vinorelbine/cisplatin is a well-tolerated and active regimen, offering symptom palliation and improved performance status in a significant proportion of patients. (*JUMMEC 2001; 1:20-23*)

KEYWORDS: Vinorelbine, lung cancer, chemotherapy.

Introduction

Bronchogenic carcinoma is the most common cancer diagnosed in recent years and accounts for the majority of cancers in both female and male patients (1,2). The majority of cases present late and are not resectable (3). Chemotherapy, neoadjuvant or concurrent, with radiotherapy is now the primary mode of therapy for these patients (3). To date, many newer agents have been introduced and have been reported to be efficacious for non-small cell lung cancer (NSCLC), which accounts for 80% of the histological type of lung cancer. Vinorelbine used in combination with cisplatin have been purported to be an agent with better efficacy than the standard cisplatin/mitomycin and cyclophosphamide regime with acceptable side effects (4). We need to better define the activity and toxicity of vinorelbine/cisplatin as first line chemotherapy in Malaysian patients with locally advanced and metastatic NSCLC. Therefore, a descriptive analysis of a preliminary group of patients treated with this regime was carried out to evaluate these parameters.

Materials and Methods

Patient population

From August 1999 to January 2001, patients newly diagnosed with NSCLC in the University of Malaya Medical Centre were considered for chemotherapy if they had stage III or IV inoperable disease. Diagnosis of NSCLC was made by histological and/or cytological examination of sputum cytology, the primary tumour mass, involved lymph nodes or other involved organs. Clinical staging was done according to the International staging system for lung cancer (5), based on physical findings, computed tomography (CT) scan of the thorax and upper abdomen and bronchoscopy. Patients had CT scan of the brain or bone scans if they had symptoms or biochemical results suggestive of involvement. Those who consented to chemotherapy with cisplatin plus vinorelbine were recruited prospectively for analysis. This regime involved administering intravenous cisplatin

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80 mg/m² on day 1 and vinorelbine 25 mg/m² on days 1 and 8, every 3 weeks. Pre-chemotherapy evaluation included haemoglobin levels, white blood count and differential counts, renal function and liver function as well as bone chemistry with chest radiographs and CT scan thorax and upper abdomen. At each cycle, the haemoglobin and absolute white blood counts were checked on day 8, 15 and whenever necessary. Chemotherapy was delayed if the absolute neutrophil count was less than 1.5x 10⁹/L or if the platelet counts were less than 100x 10⁹/L. Chemotherapy was resumed upon recovery of the counts. If the haemoglobin was less than 8g/l, blood transfusion was given but chemotherapy was administered as scheduled. The drugs were diluted in normal saline; cisplatin infused over an hour while vinorelbine was given in 10 minutes.

The hydration regime for cisplatin included one litre of dextrose 5% and one litre of normal saline with 2 grams of potassium chloride (KCL) and 2 grams of magnesium sulphate. Antiemetics (granisetron 3 mg), 10 mg dexamethasone and 10 grams of mannitol were routinely given 1/2 hour before the commencement of cisplatin infusion. This was followed by one litre of dextrose 5% and one litre of normal saline with 2 grams KCL and 10 grams of mannitol post-cisplatin. Postchemotherapy medications included oral maxolon 10mg TID as necessary. Patients were evaluated for performance status according to World Health Organization (WHO) criteria (6), symptoms clinical signs, toxicity profile (Common Toxicity Criteria)(7) and tumour response every cycle.

A CT scan thorax was done after three cycles of chemotherapy to evaluate tumour response. A complete response was defined as the disappearance of all measurable or assessable disease, signs, symptoms and biochemical changes related to the tumour. Partial response meant a greater than 50% reduction in measurable lesions. Stable disease indicates <50% reduction and <25% increase in measurable lesions without new lesions. Disease progression was defined least 25% increase in tumour size or the appearance of new or metastatic lesions.

Results

Twelve patients with the median age of 53.5 (range 24-68) years received chemotherapy as scheduled, totaling 46 cycles. Seven patients had adenocarcinoma, four squamous carcinoma and one poorly differentiated carcinoma. Ten patients had stage IV disease while one patient each had stage IIIa and IIIb disease, respectively. One patient received radiotherapy to the brain for symptomatic brain metastasis. The patients' performance status (PS) were as follows: four had PS 1, six PS 2, and one each PS 3 and 4 (Table 1).

Table 1. Patient clinical profil.

• Total number of patients:	12	
• Sex:	10 Male	2 Female
• Age(years):	range: 24-68	median: 53.5
• WHO performance status (Stage) (no. patients)		
	1	4
	2	6
	3	1
	4	1
• TMN staging:	Stage IIIa	1
	Stage IIIb	1
	Stage IV	10
• Histology	:Squamous cell carcinoma	4
	:Adenocarcinoma	7
	:Poorly differentiated carcinoma	1

Table 2. Toxicity Evaluation.

Toxicity	Grades				
	0	1	2	3	4
Anaemia	5	4	2	1	0
Leukopenia	5	3	2	1	1
Neutropenia	3	2	0	2	5
Thrombocytopenia	12	0	0	0	0
Nausea/vomiting	5	1	6	0	0
Alopecia	6	2	1	3	0
Phlebitis	0	0	1	0	0
Neurotoxicity	0	0	0	0	0
Febrile neutropenia	0	0	0	0	0
Mucositis	0	0	0	0	0
Nephrotoxicity	0	0	0	0	0
Hepatotoxicity	0	0	0	0	0

The regime was well-tolerated without any chemotherapy-related deaths. The major toxicities were haematological; one patient each with Grade 3 anaemia, Grade 3 and Grade 4 leucopenia, two had Grade 3 neutropenia and five had Grade 4 neutropenia but not associated with fever. Non-haematological toxicities were only significant (Grade 3 or 4) in the following; three had Grade 3 alopecia and one had Grade 3 phlebitis (Table 2). Chemotherapy was stopped after one cycle in one patient due to progression. After three cycles (total 34 cycles), three of the remaining eleven patients demonstrated partial response, two stable disease and the rest progressed. One patient who had partial response opted to continue treatment elsewhere. For the four patients who completed 6

cycles, two demonstrated stable disease and two partial response (Table 3). Time to disease progression and survival data were not available.

Table 3. Patient response.

Cycles completed	Complete response	Partial response	Stable disease	Disease progression
3	0	3	2	7
6	0	2	2	0

At the time of chemotherapy completion, symptom improvement was reported in all but one patient. Similarly, PS was better in four, stable in six but declined in two patients whose disease progressed.

Discussion

Lung cancer is a worldwide health problem and has now exceeded all other cancers in the Western world. It is the commonest reported cause of cancers in the United States of America as well as Europe (1,2); with around 170,000 new cases (90,000 in men and 80,000 in women) estimated annually and at least 157,000 deaths predicted in 2001 in the United States alone (1).

The overall cure rate remains around 10-14% and non-small cell lung cancer (NSCLC) accounts for approximately 80% of lung cancer cases with adenocarcinoma occurring most commonly. The majority have advanced, poor prognosis stage III and IV disease and fewer than 20% of NSCLC patients are deemed resectable, due to late presentation, and since this is the primary curative mode of treatment, it means that the majority will need chemotherapy, radiotherapy and supportive care (6). Cures are achieved in less than 20% for the locally advanced disease and are only anecdotal in the metastatic group of patients.

In unresectable or inoperable locally advanced and metastatic NSCL cancer, chemotherapy for good performance patients is an appropriate mode of therapy and is usually combined with definitive thoracic radiotherapy for selected stage III patients (6,7). For this group of patients, since the influential CALGB 8433 trial (8,9), which demonstrated a 5-year survival that tripled in the combined modality group (17% v 6%), numerous other studies have shown that induction (or neoadjuvant) cisplatin-based chemotherapy with definitive radiotherapy is superior to thoracic radiotherapy alone (10,11). Modern chemotherapy regimes may provide absolute benefits of about 5% in the surgical and 2% in the definitive radiotherapy setting at 5 years (11). For metastatic disease, trials indicate median survival improvement of 6-8 weeks and absolute 1-year survival improvement of 10% (from 15% to 25%

)(11, 14) for those patients on cisplatin-based chemotherapy. More importantly, quality of life (15) and symptom improvements (16) have also been demonstrated in patients on chemotherapy.

Chemotherapy therefore is an integral part of combined treatment modalities for non-small cell lung cancer (17) and the search for newer agents with better efficacy and less toxicities have resulted in the development of recent chemotherapeutic agents. Vinorelbine; the antimetabolite gemcitabine; the taxanes, paclitaxel and docetaxel; and the topoisomerase I inhibitors, irinotecan and topotecan have come into use in the last few years. These newer agents have demonstrated superior activities compared to older agents in lung cancer treatment with single agent response rates of between 20-27% and combinations with cisplatin have shown response rates of between 22 to 47% with improved survival (18, 19).

Vinorelbine is a semi synthetic vinca alkaloid with good activity in non small cell lung cancer and in clinical settings have been effective as first line agent in stage III and IV disease. Trials have demonstrated that cisplatin combined with vinorelbine is better than either agent alone and has an objective response rate of 30% with a median survival of 40 weeks and 1- and 2- year survival reaching 33% and 15%, respectively (20,21). Vinorelbine as monotherapy plus best supportive care proved to be as efficacious with improved quality of life as well as improved survival (median survival of 28% and 21% with one year survival of 32% and 14% for stage III and IV, respectively for these patients above 70 years of age (22).

With the increasing need to administer chemotherapy in our NSCLC patients, vinorelbine was chosen as the newer agent to be paired with cisplatin for our chemotherapy regime based on the above evidence for its clinical usage. Our 12 patients were all deemed inoperable with the majority in the stage IV group. Due to poor lung reserve, definitive radiotherapy was judged by our radiotherapist to be inappropriate and could not be administered for those in the stage III category. Performance status for the majority was in the recommended WHO stage 1 and stage 2 categories and chemotherapy was administered to the other two patients due to their young age; 24 and 35 years old, respectively. We achieved a response rate of 25% after 3 cycles and 17% after 6 cycles, which are comparable to the published data.

Toxicity data for vinorelbine (20) cited myelosuppression as the major dose-limiting toxicity. Grade 3 or 4 neutropenia occurred in 53.2% of patients on monotherapy with only 3.4% complicated by sepsis. Generally, toxicity is tolerable and acceptable in published reports.

In our patients group, myelosuppression was also the commonest severe toxicity noted. There were no cases of related sepsis or mortality. Grade 3 alopecia and

phlebitis were the only other significant toxicity and occurred in 3 and one patients, respectively. These figures are similar to the published data.

From the point of performance status, 25% of our patients reported improvement, while half reported stable condition, and decline occurred in two patients whose disease was progressive. This is encouraging when combined with the report of symptom relief in all but one patient.

The role of chemotherapy as a palliative modality is worthwhile in metastatic cancers (24) and our patients demonstrated the viability of utilizing the newer agent vinorelbine as a chemotherapeutic agent with promising results in patients with locally advanced and metastatic NSCLC. Vinorelbine and cisplatin is a well-tolerated and active combination regimen, offering symptom palliation and improved performance status in a significant proportion of patients.

Apart from demonstrating comparable results in our patient population, we have also learnt that to provide good quality care in our lung cancer patients, a dedicated oncological day care service is crucial and should be given the necessary consideration in any future planning for hospital services.

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EVALUATION OF CLASSROOM TEACHING BY STUDENTS AND PEERS FOR MANY PURPOSES IN ACADEMIA

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ABSTRACT: Improving upon the quality of teaching by teaching staff at all educational institutions is a very significant objective. Evaluation of teaching performed by individuals at such institutions would be instrumental in assessing the quality of such teaching and a tool towards its improvement. In this article, one scheme for teaching evaluation by students and another by peers are proposed and discussed. Assessment by students may provide contrasting results to those obtained from peers. For a "just and fair" overall assessment of one's teaching, it is recommended that students' evaluation would be combined with those of peers. Results of such an evaluation of teaching should be perceived as being valuable in providing feedback to the teacher and can be utilized for many purposes by academicians and administrators. (*JUMMEC 2001; 1:24-29*)

KEYWORDS: Academia, classroom teaching, evaluation by peers, evaluation by students, proposed schemes.

Introduction

Educational institutions, at all levels, strive for quality teaching being delivered to their students. Such can be achieved by: recruitment of teaching staff of certain qualifications and/or experience, improving upon the teaching skills of existing staff, improving upon existing teaching tools and facilities and/or following new methods for teaching that would be more effective. In institutions of higher learning, quality teaching impacts the quality of graduates and reflects positively on the institution. Thus, several educational tools are utilized – e.g., many medical schools have a department that specializes in medical education. Such a department is concerned with the overall responsibility (among many) of raising awareness among teachers about new methods of teaching, assessment of teaching and methods of improving teaching techniques.

Students are the direct recipients of the teaching done by academic staff; thus, they should be in a position to make a judgment (from a student's standpoint) on such teaching. It would not be unexpected that many factors about the teacher can influence the student's opinion. However, a clearer idea about some teacher's performance can be drawn when a sizable number of students (the majority of those being taught) respond to a questionnaire and such results would be analyzed. For other academic purposes; such as promotion to a higher academic rank, contractual considerations, excellence in teaching awards or otherwise – evaluation of the teaching done by a staff member needs to be

also assessed by peers. Peer evaluation of teaching is necessary because students may not be in a position to make an assessment of some aspects involved, e.g., command of the subject matter or effective delivery of content.

The purpose of this article is to propose two separate schemes (questionnaires) for the evaluation of teaching performed by an academic staff member in an institution of higher learning. One of the schemes is designed for students – as the immediate recipients of the teaching without them being fully aware of the subject matter. The other scheme is designed for peers – who can make an objective judgment on a fellow teacher's teaching. It is not, however, the purpose of this article to suggest how the results of one's teaching evaluation can/would be used by their institution of affiliation.

The scheme for students

Items of the teaching evaluation form (questionnaire) by students is shown in Scheme I. The date on which evaluation is made, the name of the teacher and the name of the course/module/program are left blank and would be filled out appropriately. The scheme (form, questionnaire) has a brief introduction to state the purpose of such an evaluation. The student is thanked

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for responding and for his/her assistance in such an evaluation, as an encouragement to fill out the requested information. The scheme is comprised of 4 components, namely: organization, faculty/student interactions, teaching techniques/approaches and impact on students. Each item in any component of the scheme carries an equal weight, considering the analysis of such results. Each component has a space, below its items, for students to make any comments they wish. The student is thanked, once more, at the end of the questionnaire for completing the effort.

The responses that students of a certain course or program provide to all 4 components of the scheme would shed significant information about the teacher being evaluated and about the overall quality of his/her teaching. While students may be subjective in their responses to items of this scheme, perhaps because of their concept or idea of an ideal teacher (1, 2) or what the faculty members themselves perceive about their own teaching (3), the results collected from a large number of students would undoubtedly reveal valuable information.

The items of the questionnaire are designed in a fashion that it is "positive" if the student's response is strongly agree or just agree. Analysis of obtained responses from students involves "pooling" under two main categories: agree or disagree. Results would be expressed in percentages for each item, i.e., percentage of students who "agree" and those who "disagree". For each component of the questionnaire, the collective percentage for all items can be averaged – to give an overall view of how students rated a certain component. Pooling of responses for all items of the questionnaire, of all 4 components, would give an overall evaluation of the teaching done by that individual teacher.

When the scheme for evaluation of teaching by students is used, it is better that a teacher has taught the "evaluating" group of students a number of not less than 5 lectures in a series – preferably related to a particular topic. This is to ensure that students have had an appropriate, even brief, opportunity to make such an evaluation. While teaching by students contributes greatly to formulate an opinion on one's teaching, evaluation by peers is very complimentary to that of students – and is a must when promotion of academic staff is involved.

The scheme for peers

Peers would be in a position to make an objective evaluation on a colleague's teaching. Such is "usually" carried out by the senior members of academic staff; i.e., professors, for those of a lesser academic rankings. Normally, there should be at least 3 "evaluators" of a teacher seeking a promotion, an extension of an existing

work contract, confirmation of appointment or for any other academic purpose. The evaluating professors may be of the same specialization as the teacher to be evaluated – however, this is not a "prerequisite". In fact, it is preferable that professors of different disciplines to be evaluators. Such a selection of evaluators is by either appointment by the Dean of the faculty or by "mutual agreement" between the teacher to be evaluated and the Dean of the faculty and/or the appropriate committee in charge of such an academic responsibility. The decision-making body or person(s) should take measures to ensure that such an evaluation of that teacher is done both fairly and objectively.

The form for evaluation of teaching by peers is shown in Scheme 2. It is a much shorter form than that for students. Senior members of academic staff are in a much better position to assess the teacher's command of the subject matter, how recent or old the information being taught, how organized is it being taught, how able is the teacher to draw students' attention and interest. Additionally, there is an assessment of to what extent that teacher who is being evaluated can be considered as a "role model".

Evaluators have 5 main items to rate the teacher about (Scheme 2). A space is left under each item for the evaluator to make any relevant comments. A rating (score) for any item ranges from 1 to 5. Such scores correspond to the following rating descriptions: 1 = poor, 2 = fair, 3 = good, 4 = very good and 5 = excellent. The results of such scoring of individual evaluators would be pooled to give an average score for each parameter/item. Of course, the more the evaluators the clearer idea of the teaching and of the teacher would be revealed – especially if there are some written comments mentioned. However, such an evaluation of teaching by peers should not be done in any annoying, offensive or provocative fashion. For example, evaluators need not appear in the classroom in a group and it would be courteous for them to arrange their appearance in the classroom with the teacher being evaluated. Peer evaluation of teaching "usually" involves the teaching of one lecture, however, it might be necessary for some evaluators to observe a teacher's presentation for a second time. This evaluation of teaching is, naturally, done in the classroom and total confidentiality of this process ought to be preserved at all times.

Experienced evaluators of teaching, who are experienced teachers themselves, would be expected to observe many aspects about the teacher whom they are evaluating. To start with, the evaluator should be "free of bias or prejudice" and evaluate only what is being observed – to ensure objectivity. The evaluator should observe some personal aspects of the teacher being evaluated (e.g., appearance, punctuality, good communication skills?, good-spirited?, how friendly

towards students?, able to draw students' interest? and whether he/she can be motivating to students?). The evaluator should also observe those traits relating to the teacher's delivery of the subject matter: volume of voice, tone of voice, clarity of diction and speed of speaking. The logical sequence of presenting the subject matter, the adequate and proper use of audiovisual aids as well as the proper use of the writing board should be observed and taken into consideration. The way the teacher stands in the classroom, walks (pacing), addresses all students, allows students to ask questions, being interactive and attract students' attention to the subject matter are very important criteria for assessment.

Discussion

Quality teaching is a matter that all educational institutions, at all levels, strive for. In academia, institutions of higher learning, the main responsibilities include: teaching, research and community (large or small) service. Even institutions that have very vigorous research programs put a very significant value and much weight to the quality of teaching being delivered, as such will have a great impact on their graduates. However, evaluation of teaching seems to receive less attention in medical schools than the evaluation of other academic pursuits such as research (2).

Students' needs and interests can be revealed and identified from the criteria they use to designate a teacher as good, effective or ideal. Similarly, quality of teaching depends on teachers' perceptions of the students' needs and teachers' responsibilities. Thus, if teachers are unaware of effective and ineffective teaching behaviors, how will they be able to help students achieve desired goals? (2). Teachers should also know the criteria used by students to identify effective teaching behaviors (4,5). A review exploring instruments for the evaluation of teaching effectiveness has been published (6). For aspects of teaching effectiveness in medical school settings, it might be of a particular interest to review some pertinent studies (7 - 12). However, collectively, six characteristics were identified for evaluation of the medical teacher: professional competence, interpersonal relationships, teaching practices, personal characteristics, evaluation (assessment) practices and availability to students (13).

For many aspects of academia, among which are: recruitment of academic staff, promotion to a higher academic rank, renewal of an existing contract or inviting a visiting lecturer – data on the teaching performance of the teacher involved would be of importance and may be required. Two schemes for evaluation of teaching done in the classroom by an individual teacher are proposed herein: one (Scheme 1) to be completed by students and the other (Scheme 2) for peers to

complete. Obtained results of items and components of these schemes need to be tabulated (i.e., totaled and averaged) and then analyzed. Segmental analysis (either by item or a whole component) can be performed to reveal points of weakness and points of strength of one's teaching. It is of utmost significance that the teacher being evaluated becomes aware of the obtained results of his/her teaching evaluation. This feedback process is of extreme value and is of benefit to the teacher involved, future students, the faculty of affiliation and the university at large. If the prevalent attitude of the institution and its teaching staff recognizes that perfection is almost impossible to achieve and that everyone is striving for the best that can be achieved, there will be a realization that "there is always room for improvement". With this kind of attitude and spirit, even if the results of one's teaching are not highly ranked – it will be understood that such is a very useful exercise and a valuable feedback. After all, even the best of teachers feel that they still can improve upon their teaching in one aspect or another (personal experience and communication).

As students are not supposed to be expert teachers or are knowledgeable about the subject matter being taught (and they are not expected to be), their evaluation may tend to be somewhat subjective. Considering that students' evaluation of such teaching can be influenced by some factors, among which are: difficulty of the subject matter, classroom settings, liking or disliking of the teacher... etc. – collective data from the majority of students being taught would be still a useful indicator of the teacher's performance. Studies have shown that there can be differences in perception between students and teachers about both effective teaching and teachers (10, 14, 15). Therefore, assessment of the teaching done by an individual academic staff member needs to incorporate the results obtained from students with those results of peer evaluation. Such would constitute a "just and fair" evaluation of such teaching, for whatever purpose in academia this result will be utilized.

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SCHEME 1: Evaluation of teaching by students

Course/Module:

Date:

INTRODUCTION

Dr./the Dean of the faculty of/the University of (choose one and/or enter name) is interested in your opinion about the lectures in (state discipline/subject.....) which Dr./Mr./Ms./Mrs. (choose one) (state name of teacher) has taught you. This questionnaire gives you an opportunity to express your anonymous views about the way these lectures were taught.

Please provide your thoughtful views by marking the most appropriate response to each question. The information you provide will be of value to the teacher involved, future students, the Faculty and to the University.

Thank you very much for your assistance.

ORGANISATION

	Strongly agree	Agree	Disagree	Strongly disagree
1. The objectives for the lectures were made clear.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. The objectives for the lectures and what was taught matched.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. It was clear to me what concepts and principles I have to learn.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. The material and information were presented in an orderly manner.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. The relationships among the various topics/points covered in the lectures were clear.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. The lectures were well-organized.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. The lecturer used class time well.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. The lecturer was always on time.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments: _____

FACULTY / STUDENT INTERACTIONS

	Strongly agree	Agree	Disagree	Strongly disagree
1. The lecturer was aware when students did not understand the concept/material.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. The lecturer was willing to help students who had difficulty understanding the concept/material.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Students felt free to ask questions and express their views.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. The lecturer provided opportunities for students to actively participate in the class.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. The lecturer was interested in knowing how much students have learned from the lectures.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. The lecturer showed interest in "students" learning the materials covered.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. The lecturer made him/her self available for consultation with students.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. The lecturer was well prepared for each lecture.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments: _____

TEACHING TECHNIQUES / APPROACHES

	Strongly agree	Agree	Disagree	Strongly disagree
1. The lecturer used examples and illustrations to clarify the content of the materials covered.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. The lecturer emphasized the important points.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. The lecturer presented the material clearly and attractively.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. The lecturer summarized important concepts at the end of the session.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. The lecturer presented material near students' level of understanding.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. During teaching sessions there was enough time to clarify concepts.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. The transparencies were well prepared.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Electronic projection equipment were useful in teaching the material.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. The lecturer encouraged students to think for themselves.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. The pace (rate) at which the lectures were given was the right pace for me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. The lecturer raised challenging questions and problems for discussion.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. I felt free to ask questions and express myself in the classroom.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. The lecturer told students how they will be evaluated.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. My interest in the subject area has been stimulated by this teacher.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments: _____

IMPACT ON STUDENTS

	Strongly agree	Agree	Disagree	Strongly disagree
1. I believe that I understood the material covered.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. I believe that other students in my class understood the material covered.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. The lectures improved my knowledge and appreciation of the subject matter.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. In my opinion, the lecturer has accomplished the objectives of his/her lectures.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments: _____

THANK YOU FOR COMPLETING THIS QUESTIONNAIRE

SCHEME 2: Evaluation of teaching by peers.

PROMOTION/CONFIRMATION OF APPOINTMENT OF ACADEMIC STAFF

FORM NO.

Dr./Mr./Ms./Mrs. (choose one and insert name).....an (Instructor/Assistant Professor/Associate Professor) in our Faculty, is being considered for promotion to the rank of (Assistant Professor/Associate Professor/ Professor) OR seeking confirmation of appointment OR (state any other purpose.....). You have been selected/appointed OR nominated by Dr./Mr./Ms./Mrs./ Dean of the Faculty/.....Academic Committee (choose one and state name)as someone who can comment on (his/her) teaching abilities. We will appreciate your assessment of this candidate's teaching on this form. Your evaluation will be held in strictest confidence.

 (Requester) _____
 (Position of Requester) _____
 (Signature of Requester)

Please circle your response according to the scale at the bottom of the form

Item					
1. Command of subject matter	1	2	3	4	5
Comments:	_____				
2. Growth in content area and how recent?	1	2	3	4	5
Comments:	_____				
3. Ability to organize content and present it logically	1	2	3	4	5
Comments:	_____				
4. Ability to stimulate student's interest	1	2	3	4	5
Comments:	_____				
5. Personal attributes as a role model	1	2	3	4	5
Comments:	_____				

GENERAL/OVERALL COMMENTS:

- (5) Excellent Very Strongly Supports Promotion, Confirmation...etc.
- (4) Very Good Strongly Supports Promotion, Confirmation...etc.
- (3) Good Supports Promotion, Confirmation...etc.
- (2) Fair Insufficient for Promotion, Confirmation...etc.
- (1) Poor Insufficient for Promotion, Confirmation...etc.

EFFECTS OF AQUEOUS PLANT EXTRACTS ON THE PHAGOCYTOTIC CAPABILITY AND INTRACELLULAR KILLING OF *STAPHYLOCOCCUS AUREUS* BY MURINE PERITONEAL MACROPHAGES *IN VITRO*

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ABSTRACT: Nine local plant species were picked randomly and their aqueous extracts have been screened to know their effects on the phagocytic capability and intracellular killing of *Staphylococcus aureus* bacteria by mouse peritoneal macrophages. Macrophage cultures were incubated with different concentration of each plant extracts for 1 hour. Among these aqueous extracts, *Ageratum conyzoides* and *Melastoma melabathricum* inhibited the phagocytic capability and intracellular killing of *Staphylococcus aureus* compared with controls. Elicited (activated) cells have more phagocytic capability and intracellular killing than the resident (normal) macrophages. There were no differences in the viability of cells between treated cells (with extracts) and controls (without extracts). (JUMMEC 2001; 1:30-33)

KEYWORDS: Aqueous plant extracts, murine macrophage, phagocytosis.

Introduction

The *Astreeaceae* and *Melastomataceae* families are groups of plants that have been widely used in natural medicine. Among others, anti-inflammatory, spasmolytic, anticonceptive, antibacterial insecticidal, antihelmintic and antihypertensive activities have been reported (Yamamoto *et al.*, 1991; Silva *et al.*, 2000; Abena *et al.*, 1993; Cheng *et al.*, 1993; Perumal Samy *et al.*, 1999; Alen *et al.*, 2000; Okunade, 2002). The antibacterial and antihelmintic activities of some members of these families, such as *Ageratum conyzoides* and *Melastoma melabathricum* have been explained by their action on the immune system (Perumal Samy *et al.*, 1999; Alen *et al.*, 2000).

Ageratum conyzoides L., is an annual herb with long history of traditional medicine uses in many countries in the world, especially in the tropical and subtropical regions. A wide range of chemical compounds including alkaloids, flavonoids and terpenoids has been isolated from this species. Extracts and metabolites from these plant extracts have been found to possess pharmacological and insecticidal activities (Okunade, 2002). Such extracts also used for mental disorders and infectious diseases, cephalgia, enteralgia and fever and contraceptive properties (Abena *et al.*, 1993).

A diminution in the phagocytic capability response of murine peritoneal macrophage was observed when these cells were treated *in vitro* with certain different

plant extracts from other families (Van der Nat *et al.*, 1987, 1989; Courreges *et al.*, 1994; Benencia *et al.*, 1995, 1999). The plant extract also inhibit the binding of opsonized particles to macrophages thus indicating that the observed anti-phagocytic effects is possibly due to failure of opsonized particle to bind these cells (Benencia *et al.*, 1999). In the present study an attempt was, therefore, made to investigate the effects of certain plant extracts on the phagocytic capability and intracellular killing of *S. aureus* by mouse peritoneal macrophages, because currently there was no reports on such studies.

Materials and methods

Animals

Pathogen-free adult male 7-8 week-old BALB/c mice weighing 20-25 grams were used in the experiments

Preparation of plants extracts

Water soluble extracts of *Cerpis japonica*, *Elephantopus scaber*, *Ageratum conyzoides*, *Orthosiphan aristatus*, *Melastoma melabathricum*, *Piper betel*, *Piper Sarmentosum*, *Baeck frutescens* and *Hisbiscus rosa sinensis*, were collected and identified by ethnobotanist. For the prepara-

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ration of extracts, plants were washed with distilled water and dried in oven (54-65°C) separately. After fully dried (one week), plants were ground to powder form. Crude aqueous extracts was prepared, filtered and dried under vacuum in a rotary evaporator. The remaining resinous products were freeze dried and stored at -20°C until used.

Preparation of bacteria

Bacterial cultures

Staphylococcus aureus grew colonies on blood agar, transfer colonies into Brain Heart Infusion (BHI) broth and cultured overnight at 37°C.

Bacterial counts

BHI broth, centrifuge at 1000g, 4°C for 15 minutes and supernatant discarded. Wash pellet twice centrifugally with PBS pH 7.2 at 1000g, 4°C for 15 minutes. Re-suspend and adjust concentration of bacteria to 4×10^6 bacteria/ml cold RPMI 1640 by counting with a haemocytometer at 400x magnification.

Bacterial opsonization

Denature complement by immersing normal mice serum (NMS) in a 56°C water bath for 30 minutes. Centrifuge at 500g for 10 minutes at 4°C to remove debris and dilute NMS to 20% with RPMI 1640. Incubate an equal volume of bacterial suspension in RPMI 1640 and diluted NMS for 30 minutes at 37°C on a rotary platform (this will allow attachment of IgG Fab to the surface of the bacteria). Serum was removed by centrifugation and opsonized bacteria was re-suspended to a concentration of 4×10^6 bacteria/ml RPMI 1640 medium.

Collection of peritoneal macrophages

Mice were sacrificed by cervical dislocation. Resident peritoneal cells were obtained by washing the peritoneal cavity with warm PBS (37°C). The peritoneal lavages were collected in sterile test tube (this tube must be kept on ice and chilled before use since macrophages will adhere to the glass at room temperature). Macrophages were washed once with cold PBS and re-suspended in the cold RPMI 1640. Cell viability, determined by the Trypan Blue exclusion method, was always greater than 98%. The numbers of viable macrophages in this suspension was determined using haemocytometer chamber and adjusted to 4×10^5 /ml RPMI 1640 in 10% inactivated calf serum.

In the same way elicited peritoneal cells were harvested from mice injected intra-peritoneally with 3 ml of sterile 2% starch solution in PBS 3 days before sacrifice.

Measurement of phagocytic capability and intracellular killing of bacteria by macrophages

Place 200 µl of the cell suspension (resident or elicited macrophages) into each well of TC chamber slide (Nunc) and incubate for 2 hours at 37°C, in at atmosphere of 95% air, 5% CO₂ (during this step cells will adhere to the slides). Remove media and unattached cells by gentle aspiration and wash wells with 100 µl warm RPMI 1640

Add 200 µl of different concentration of the each plant extract into each well except the controls (add 200 µl of RPMI 1640), after 1 hour incubation add 200 µl of opsonized bacteria (10:1 bacteria to cell ratio) into all the wells of slide. Incubate for 45 minutes at 37°C, in at atmosphere of 95% air, 5% CO₂ for phagocytosis and intracellular killing of bacteria to occur. Aspirate and discard contents of well, wash wells 2x with warm RPMI 1640.

Add 200 µl of gentamicin (50 µg/ml) into all the wells incubate for 15 minutes to kill the extra-cellular and nonspecifically attached bacteria.

Detach wells and gasket from the glass slide and wash 2x with warm RPMI 1640. Stain with previously prepared acridine orange (0.14 mg/ml RPMI 1640) for 45 second, aspirate and discard acridine orange and wash briefly with warm RPMI 1640 to remove excess stain. Counterstain with previously prepared crystal violet for 1 minute (prepared by adding 5 mg crystal violet to 10 ml PBS, shake vigorously and filter with Whatmans filter paper). Aspirate and discard crystal violet and wash briefly with warm RPMI 1640 to remove excess stain. Air-dry the slide and examine under fluorescence microscopy. Cell counts are performed under x1000 magnification using oil immersion. Count number of live and dead bacteria in 100 cells by systematic scanning of each well (intracellular bacteria fluoresce green when viable and red when non-viable). Cells that had ingested at least 4 bacteria were considered positive. All measurements were carried out in duplicate.

Determine % phagocytosis (% phagocytosis = number of macrophage having 1 or more bacteria cells/100 macrophage count). Determine % intracellular killing (% intracellular killing = total number of bacteria that fluoresce red in all cells/total number of bacteria counted in all cells).

Results

Effect of plant extracts treatment on peritoneal macrophages

Phagocytic capability and intracellular killing of bacteria

The effect of different concentration of aqueous plant extracts on the phagocytic capability and intracellular

killing of bacteria is shown in Table 1 and 2. Extracts of *A. conyzoides* and *Melastoma melabathricum* caused inhibition of phagocytosis and intracellular killing of bacteria by murine peritoneal macrophage even at the lowest concentration tested. Between treated cells, these inhibitory effects were higher in elicited cells than normal resident cells. The average percentages of phagocytic bacteria were lower in treated (elicited and resident) cells than those of control cells.

Also there were no differences observed in the viability of total number of cells between treated and control cultured cells according to the trypan blue exclusion method employed in any of the extract concentration tested.

There were no differences in the average percentages of the phagocytic activity among treated (elicited and resident) cells with the remaining plant extracts. The average phagocytic activity ranges between (66-74) with the same dilutions used as in Table 1 and 2.

Table 1. Effect of *A. conyzoides* extract on the phagocytic capability and intracellular killing of bacteria by murine peritoneal macrophages after incubation with different dilution of plant extracts

<i>A. conyzoides</i> extract concentration (mg/ml)	% Phagocytic cells		% Intracellular killing	
	Resident peritoneal cell	Starch elicited peritoneal cells	Resident peritoneal cell	Starch elicited peritoneal cells
3.2	20%	32%	6(1.2%)	10(3.2%)
1.6	29%	44%	7(2.03%)	13((5.72%)
0.8	43%	50%	10(4.3%)	16((8%)
0.4	50%	59%	12(6%)	22(12.98%)
0.2	62%	68%	18(11.16%)	29(19.72%)
Control	74%	80%	24(17.76%)	38(30.04%)

Table 2. Effect of *M. melabathricum* extract on the phagocytic capability and intracellular killing of bacteria by murine peritoneal macrophages after incubation with different dilution of plant extracts

<i>M. melabathricum</i> extract concentration (mg/ml)	% Phagocytic cells		% Intracellular killing	
	Resident peritoneal cell	Starch elicited peritoneal cells	Resident peritoneal cell	Starch elicited peritoneal cells
3.2	22%	30%	5(1.1%)	9(2.7%)
1.6	33%	40%	5(1.7%)	11(4.4%)
0.8	45%	49%	8(3.6%)	15(7.4%)
0.4	53%	57%	11(5.8%)	20(11.4%)
0.2	60%	64%	14(8.4%)	26(16.6%)
Control	74%	80%	24(17.76%)	38(30.64%)

Discussion

The present study clearly demonstrates that aqueous extracts of *A. conyzoides* and *M. melabathricum* exert inhibitory effect on the phagocytic capability and intracellular killing of bacteria by murine peritoneal macrophages *in vitro* cultured. Similar results have been obtained with plant extracts from other families (Van der Nat *et al.*, 1987, 1989; Correges *et al.*, 1994; Benencia *et al.*, 1995). However, in contrast to our results, several researchers using other plant extracts have not shown any influence on the phagocytic functions (Simons *et al.*, 1990; 't Hart and Simons, 1992; Benencia *et al.*, 1994). Also, several workers using other plant extracts have shown that these extracts appeared to stimulate phagocytic function (Atal *et al.*, 1986; Sharma *et al.*, 1994).

The results of the current study also clearly indicate that there were no differences in the percentage of viability of cells observed between treated and controls according to the trypan blue exclusion method. These data are consistent with previous reports showing the lack of toxicity of these extracts in different cell culture (Andrei *et al.*, 1985; Cordoba *et al.*, 1991).

The results of the present study showed that the extracts inhibited the ingestion of bacteria. Though macrophages are critical for the control and elimination of a wide number of pathogens, they can also produce tissue damage associated with generation of toxic oxygen products (Badwey *et al.*, 1980).

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A RARE ENCOUNTER WITH ACUTE EPIGLOTTITIS

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ABSTRACT: We describe a rare encounter with a 6-year old Indian boy admitted with acute epiglottitis due to *Haemophilus influenzae*. Acute epiglottitis is an uncommon cause of life-threatening upper airway obstruction and a rare presentation of invasive *Haemophilus influenzae* type b (Hib) disease in this region, compared to the more developed West. The cause for this observation is often attributed to differences in the genetic predisposition and socio-economic parameters. The organism subtype and the host response have been shown to determine the type of invasive Hib disease. However, the evidence to explain this difference is poorly understood and remains an intriguing enigma. (JUMMEC 2001; 1:34-35)

KEYWORDS: Epiglottitis, *Haemophilus influenzae*

Introduction

Acute epiglottitis due to *Haemophilus influenzae* type b (Hib) is a life threatening emergency that is well described in children of developed nations in the West prior to the introduction of routine Hib vaccination. This particular upper airway syndrome is however so rarely encountered in the developing nations of Asia that it has been described as being unknown or "never happens" to children of this region (1). In an audit of life threatening upper airway obstruction managed in a Paediatric Intensive Care unit in Malaysia, acute epiglottitis was not observed although an infective cause was responsible for up to 40% of the admissions (2). We report our experience with a 6-year old Indian boy with life threatening upper airway obstruction following acute epiglottitis.

Case history

A 6-year old Indian boy presented with a 1-day history of fever, sore throat and difficulty in swallowing associated with drooling of saliva. He subsequently became increasingly breathless with worsening stridor 4 hours prior to admission. He had been previously well and completed all childhood immunizations except for Hib vaccination. He looked unwell on examination and had marked biphasic stridor with deep inspiratory efforts. He preferred to lie on his side and was mouth breathing. His transcutaneous oxygen saturation fell to 87% intermittently. Apart from reduced air entry in the chest bilaterally on auscultation, the rest of the examination was essentially unremarkable. No attempt was made to visualize the throat. He was transferred into the operating theatre where intubation was carried out by an anaesthetic team with the paediatric and otolaryngology teams in attendance. Direct laryngos-

copy revealed a "cherry red" swollen epiglottitis with normal vocal cords and trachea. It was only possible to insert a 3.5 mm size endotracheal tube. His blood culture isolated *Haemophilus influenzae* thereby confirming the causative organism. Intravenous Ceftriaxone was administered for a total of 10 days. There was marked improvement with treatment and he was subsequently extubated after 3 days. He was well with no long-term sequelae when reviewed 6 months later.

Discussion

The case history described above is a rather rare encounter with acute epiglottitis in our unit. The remarkably low incidence of acute epiglottitis is evidence that there is a marked difference in the expression of invasive *Haemophilus influenzae* disease in this region when compared to the West (Table 1). In 3 reported publications on invasive *Haemophilus* disease in Malaysia that included a total of 188 children, acute epiglottitis was not encountered (3-5). This observation is rather intriguing as Hib vaccination is not part of the routine immunization programme in most nations of Asia including Malaysia.

The inherent properties in the genetic predisposition of the resident population between developed and developing nations is the obvious and frequently used explanation to account for this difference despite a lack of definitive evidence. Susceptibility to invasive *Haemophilus* disease in the Caucasian population has

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Table I. Incidence of acute epiglottitis in reported invasive *Haemophilus* disease in Asia.

Country/Author	Invasive <i>Haemophilus</i> disease (n)	Acute epiglottitis (%)
Malaysia		
Puthuchery SD (3)	37	0 (0%)
Khairuddin NY (4)	65	0 (0%)
Wong MF (5)	86	0 (0%)
Singapore		
Lee YS (6)	12	1 (8%)
Thailand		
Likitnukul S (7)	50	0 (0%)
Hong Kong		
Lau YL (8)	57	0 (0%)
Taiwan		
Wang CH (9)	105	0 (0%)
Chen MK (10)	43	0 (0%)

been associated with a defect in the G2m(n) allotype that regulates IgG2 antibody response, important in modulating immunity towards polysaccharide antigens like that in the *Haemophilus influenzae* capsule (11). Acute epiglottitis was also more likely to be associated with the homozygous genotype of the G2m(n) defect (12), although this observation has not always been a consistent finding. Although there is little information regarding the G2m(n) allotype in Asian children, there is indirect evidence that such defects are less common in this population. The IgG2 subclass levels modulated by the G2m(n) allotype are documented to be significantly higher in Chinese children compared to Caucasians (13); a finding that provides support to genetic susceptibility as a likely cause for the difference in the incidence of acute epiglottitis in Caucasian and Asian children.

Different subtypes/strains of Hib may also influence the type of invasive *Haemophilus* disease encountered and is another possible reason for this difference. A significant association between acute epiglottitis and the outer membrane protein (OMP) has been established, it being more commonly seen with OMP subtype I (14). However, the global distribution of Hib serotypes does not seem to support that this particular strain is more common in the developing nations of Asia (15).

Evidence presented indicates that our case reported is a rather remote encounter with acute epiglottitis in this region. Although genetic predisposition and socio-economic parameters are most likely responsible for this observation, the evidence that clearly defines the reason for it remains unclear.

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THE CHANGING ROLE OF PRIMARY HEALTH CARE IN MALAYSIA -THE PAST AND THE FUTURE

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ABSTRACT: The concept of primary health care (PHC) according to WHO has been implemented in Malaysia since 1978. The rural health centres which provide the primary health care have developed from about 47 in 1970 to about 772 in 1998. Since the implementation of the health centres there has been significant reduction in morbidity and mortality rates. However due to the emerging issues like changing demographic patterns, changing pattern of disease, and increasing demand from the public, the delivery of PHC is being reviewed. Newer programmes and review of the older programmes are being done to address the provision of PHC in the 21st century. The functions and roles of the existing staff in the health centres are being reviewed. This new concept is known as expanded scope of primary health care. The purpose of this paper is to explain the achievements in primary health care and the components of primary health care in the expanded scope. (*JUMMEC 2001; 1:36-39*)

KEYWORDS: Primary health care, health development.

Introduction

Health services in Malaysia before gaining independence in 1957 had a colonial pattern and were mainly urban based and the rural poor were virtually ignored in the provision of health care. Most of the population (80%) was rural and only 20% of the population was urban. Malaysia therefore started to develop a network of rural health services to provide health services for the under-served rural poor. This was progressively developed and came to be designated as the three-tier system for PHC. The system consisted mainly of a Main Health Centre which covered a population of 50,000, Health sub-centre for 10,000 population and midwife clinics which served a population of 2000. Following the operations research done by WHO in 1969-1971 the three tier system was re-organized to the two tier system (1). The health sub centres of the three tier system were converted to the Main Health Center. Currently the Main Health Center (now called Health Centers) covers 15000-20000 population and the midwife clinics which were converted to community clinics covers 3000-4000 people. Also it was estimated in 1975 that 50% of the rural population was covered. This coverage was based on the ratio of physical facilities to rural population. In the meantime a stop gap measure to serve the rural population was introduced-the mobile health services. This made it possible for the interim provision of services to the rural areas while waiting for

the construction of health centres and the upgrading of services on a more permanent basis.

Implementation of Primary Health Care

Malaysia was one of the countries that had pledged to adopt primary health care as formulated in the Alma Ata Declaration (2). In this phase of development of primary health care services the extension of the rural health services was an essential component. In that process PHC was part and parcel of the government's community development movement launched in 1972. The policy was to provide access to basic health care to the communities not served by rural health services. In 1978 WHO introduced the concept of Health for All by the year 2000 using Primary Health Care as a tool to achieve the Health For All strategy. Malaysia first identified the 8 elements of primary health care which also included the dental services, and then launched an extensive study throughout the country to identify the under served areas in primary health care. This analysis identified the under-served areas with respect to services as far as the 8 elements were concerned. As a consequence the number and locations of mobile ser-

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vices and new health centres planned for the rural areas was increased (3). Health cannot be attained by the health sector alone and therefore economic development, anti-poverty measures, food production, water, sanitation, housing, environmental protection and education were also emphasized by the government. From only 47 health centres in the country in 1970s, there are now about 772 health centres and about 1992 community clinics serving the country providing the basic 8 elements of primary health care. The physical development of health centres was also supported by increase of health personnel at all levels in the health care system.

Primary Health Care Achievements

There has been a significant decline in all the mortality rates. The maternal mortality rate has declined from 280 per 100,000 live births in 1957 to 20 per 100,000 live births in 1998. Similarly the infant mortality rate has also declined from 75.7 per 1000 live births in 1957 to 8.1 per 1000 live births in 1998. Another significant decline is the toddler mortality, which dropped from 10.7 per 1000 live births in 1957 to 0.7 live births per 1000 in 1998. The life expectancy has increased from 56 in 1957 for males to 69 in 1996 and for the females it has increased from 58 years in 1957 to 74 in 1996. The utilization of services has also increased. The ratio of doctors is now 1:1477. The average antenatal attendance has also increased to 8.1 per pregnant women (4). All these indicators show that we have achieved a much more in primary health care when compared to the neighbouring countries. Malaysia's decline in these health indicators has been due to commitment from the leadership and also consistent financial allocation for the health sector.

Emerging issues in the country

Emerging issues include those resulting from the changing demographic patterns such as problems among the adolescent and the elderly, rural urban migration resulting in problems such as delinquency, drug addiction, increasing incidence of STD and AIDS/HIV, mental health problems, drug abuse, teenage pregnancies, unsafe abortions and teenage prostitution. The elderly population is increasing and there is increasing demand from the public due to the economic changes. There is focus on the preventive and promotive aspect of health care and the health centres of the past would not be able to survive because of the low technology in the health centres. This was noticed in a study that showed the under-utilization of the district hospitals and health centres (5).

The pattern of diseases is also changing. We have a high number of non communicable diseases. These and other changes such as economic and environmental

changes have made it necessary for the Ministry of Health to review the function of the health centers. There was also a need to review the existing programmes and also to fit the new proposed programmes.

A review of the health centres was started in 1995. The functions and role of the staff in the health centres was reviewed with the view to download some of the activities to the lower categories and to add the new proposed programmes. The review is also with the view of introducing Information Technology at the primary health care level.

Expanded scope of primary health care services

It was realized that due to the increasing expectations and the increasing demand of the people new programmes had to be added to meet the needs of the population. This became to be known as the expanded program of primary health care. Some of the programmes introduced in the various health centres throughout the country are mentioned below:

Wellness program

It has been noticed that only the sick or those in need of treatment come to the health clinics or hospitals. The wellness program is introduced to serve the normal population, of all ages and sex. The objective is to screen the normal population so that we can treat them early to avoid complications. This programme is basically focussing on the preventive and promotive aspect of health care. Many programmes such as well womens' clinic, well adult clinic and well child clinics are being introduced in many health centres and hospitals throughout the country.

Adolescent Health programme

Problem of drugs, smoking, premarital sex, crime and many others issues are common among the adolescence in Malaysia. The health centers do not specifically have programmes for the adolescent health in this country. Because of these emerging social problems, special programmes have been added in the health centres to address these issues. One of the successful programmes introduced is the PROSTAR (Program Tanpa Aids Untuk Remaja). This programme is by the youth for youth and in particular to teach the preventive and promotive aspects of HIV/AIDS.

Care of the elderly

Presently the elderly population (above 60years) constitutes about 4.1% of the overall population. It is expected that by year 2020 the country would have about 9% of the population to be above 60 years of age. There-

fore a programme for the care of the elderly has been started in some of the centres. This programme involves screening for hypertension, diabetes, dental caries, cancers for the breast and cervix for the females and cancer for the lung and prostate for the males. It also has facilities to provide physical exercise for the elderly in the health centres.

Mental Health

With the fast developing economy there is evidence of stress and strain among the population. There is an urgent need for mental health programme. Even school children are stressed to perform better in schools. Many health centres have now introduced the mental health programme to treat mental health cases. Training is also provided to the health centre staff to treat these type of cases.

Care of the Handicapped Child

Care for the handicap children (physical and emotional) is provided by the Ministry of Social Welfare. However in the rural areas, it is the health centres which provide not only the medical aspect of health care for the handicapped but also the physical and emotional services. The health centres have taken the task of treating but also taking care of the handicapped. The nurses are trained to treat the handicap and in some areas community volunteers are participating in the programme. The main purpose of this programme is to reduce the burden of rural children by getting treatment near their homes rather than getting treatment in hospitals.

Alternative Birthing Centres (ABC)

The main objective of the alternative health centres is to have pregnant women deliver nearer their homes. The ABC is constructed in health centres (extension of delivery room) where the maternal mortality is high. This centre will deliver the low risk pregnancies and the high risk pregnancies are referred to the hospitals for delivery. This strategy is aimed to reduce maternal mortality in the district.

Community Rehabilitation

Presently the rehabilitation programme is only available at the hospital level. In this programme the rehabilitation services are provided at the health centre level. This is to provide rehabilitative services nearer to patients. The nurses at the health centres are being trained by the hospital physiotherapist regularly.

Complementary Medicine

Malaysia has a rich source of alternative medicine. We have the Chinese traditional medicine, the Indian traditional medicine and the Malay traditional medicine. This was the principle source of health care in the early 60s

and still continues to provide a considerable source of complementary care for the population. It is important to work together in this areas and the Ministry of Health has therefore decided to set up a complementary medicine unit to study these systems to see what aspects of this complementary medicine can be implemented in the health care system.

Upgrading equipment at the health centre level

With these new programmes introduced there is a need to upgrade the support services at the health centre level. The laboratory services are being upgraded to a higher level and equipment such as simple X-ray machines and ultrasound are being introduced in the health centres.

Out-patient services in the hospitals to be transferred to health section

One of the major changes is the health care system is that the primary care at the hospitals will be shifted to the health side. What this means is that the hospitals will only provide the secondary and tertiary level of care. Thus the official statistics of the primary health care will now include the outpatient care as well.

Training of personnel

These new needs will require upgrading of training of the various levels of staff and also new staff. This has prompted the beginning of the Family Medicine specialist. We now have a programme for the Family Medicine Specialist in the three major universities in the country. Regular training programme is being done for all categories of personnel.

Physical changes to the new health centres

The new health centres are larger to be able to accommodate all these services and they are now classified into type 1, type 2, and type 3. The type 1 is for outpatients with more than 750 per day and the type 2 is for outpatients between 500 and 750 and the type 3 is for outpatients less than 500 per day. The older centres are being upgraded as well.

Discussion

The value of primary health care lies in its recognition that health is a central component of overall human development and not simply a technical process of delivery of medical care by health professions. The concept of primary health care is that the essential primary care services to be provided at the first level of contact in the health care delivery system. It order to provide a good primary health care, the countries' needs

and the capacity of the country to provide the essential services at the appropriate level of care must be considered. In this respect many countries have failed to recognise the implications of the fundamental shift. Countries need to know the option they are facing and they must realise that PHC must come to terms with global and national economic realities (6). Malaysia identified the essential services in the late 1970's and implemented the primary health care concept according to the WHO's concept. Although the implementation of the programme had its problems in terms of resource allocation, it managed to achieve its goals when compared to many other countries (7). This is seen by the falling mortality rates such as infant mortality, maternal mortality and toddler mortality. The proper planning and a more holistic approach within the National Development 5-Year Plans for the health sector also helped to achieve its targets. After nearly thirty years of implementation of the primary health care there is a changing need and the programmes is therefore evolving. There are many challenges ahead with the changing situation in our country. We need to utilise the non-government organisations (NGOs) more and there is a need to increase the health budget. The provision of cost effective primary health care financing is a major challenge in our country. The existing programmes are being reviewed and the scope of primary health care is

being expanded. New programmes are being introduced to provide better services at the first level of contact. Overall there is a changing concept of primary health care to suit the needs of the people

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A SIMPLE AGAROSE-TRAP METHOD FOR DETECTION OF DNA FRAGMENTATION IN APOPTOTIC CELLS

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DNA fragmentation into oligonucleosomal DNA ladder is an important biochemical hallmark of a late stage apoptosis (1,2). It is normally demonstrated by a simple agarose gel electrophoresis of the total cellular DNA. The method widely used for preparation of the DNA, however, is tedious and is often complicated by the presence of high molecular mass DNA which makes the sample very viscous. The viscous DNA is difficult to handle and it often obscures the presence of the DNA ladders. Various methods to overcome this problem have been suggested. These include breaking up the DNA by repeated pipetting or by heating the DNA samples to 50°C. A number of commercial kits for harvesting apoptotic cells DNA are also available but most of them are costly and involve the use of hazardous chemicals such as phenol, chloroform and ethanol. We report here a rapid, simple, and environment-friendly method for harvesting DNA samples for detection of apoptotic oligonucleosomal DNA fragments.

Cells to be analyzed (1×10^5) were pelleted by centrifugation at $800 \times g$. This was followed by addition of 50 μ l lysis solution containing 1% N-laurylsarcosine (Sigma, USA), 0.2% sodium deoxycholate (Sigma, USA) and 1 mg/ml proteinase K (Sigma, USA) in L-buffer (0.01 M Tris-HCl, pH 7.6, 0.02 M NaCl, 0.1 M EDTA). The samples were then incubated overnight at 37°C. Following incubation and inactivation of proteinase K in the samples, RNase A (Sigma, USA; 1 mg/ml) was added and the samples were incubated for another 4 hours at 37°C. Since the purpose of the exercise was to separate the lower molecular weight DNA (<10 kb), to see the oligonucleosomal DNA ladders, it was desirable that the presence of the high molecular weight genomic DNA be reduced from the samples. DNA concentration was estimated using the GeneQuant (Pharmacia Biosciences, Sweden) and the samples (100 μ l) was resuspended with cut-off pipet tips in an equal volume of 1.0% agarose (Promega, USA) kept molten at 42°C. The samples were immediately chilled at 4°C for 5 minutes or until the agarose solidified. The agarose-embedded samples were minced into small pieces using pipette tips and sterilized nuclease free water (1/10th volume) was then added. The samples were centrifuged at $20,000 \times g$ for 2 minutes and the resulting supernatant was electrophoresed at 80 V for 1 hour in a 1.2% agarose gel. To visualize the DNA fragments, the gel

was stained with ethidium bromide and observed under ultraviolet light at wavelength of 302 nm.

Comparisons between untreated (Figure 1A) and agarose-treated (Figure 1B) samples performed using similar DNA samples clearly demonstrated the benefits of the latter method. Lane 2 in both figures showed DNA samples from non apoptotic cells. In Figure 1A, the quantity of the high molecular weight DNA was not consistent with the remaining samples, though equal amount of DNA was supposedly loaded into the well. This could be due to inaccurate volume of sample was actually added as a result of the difficulty in pipetting the highly viscous DNA. Whereas, in Figure 1B a sharp band corresponded to the expected amount of DNA was noted. In a similar study, samples obtained from

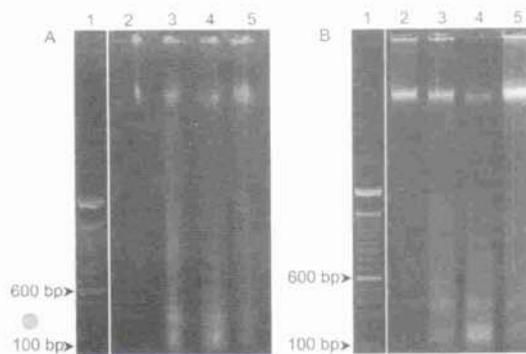


Figure 1. Agarose gel electrophoresis of DNA samples comparing the effects of trapping the high molecular weight DNA in agarose for detection of oligonucleosomal DNA fragments. Apoptotic and non-apoptotic DNA samples harvested as described in the text were electrophoresed in a 1.2% agarose gel at 80V for 1 hour. Samples untreated with agarose showed DNA smearing which obscured the DNA ladder (A). In comparison, samples electrophoresed following agarose treatment showed distinct DNA ladder (B). Lane 1: 100 bp ladder DNA marker; lane 2: DNA samples from non apoptotic cells; lanes 3-5: DNA samples from apoptotic cells.

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three different apoptotic cell preparations (Figure 1A, lanes 3, 4, 5) showed the presence of DNA smearing but not the expected DNA ladders. The corresponding samples, when embedded in agarose, showed distinct apoptotic DNA ladders. The DNA smearing and DNA ladders seen in both figures could not be due to the mincing of the agarose since no DNA smearing or ladders were noted in the similarly treated samples (Figures 1A and 1B, lane 1).

In conclusion, the agarose entrapment method described herein allowed accurate amount of DNA sample to be loaded into the agarose gel wells since the sample was non viscous and easy to be pipetted. Furthermore, the procedure was easy to perform without needing any specialized equipment or requiring organic extraction

steps. Finally the technique is highly reproducible, thus, is suitable for isolating apoptotic DNA fragments in most cell types.

Acknowledgment

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MORPHOLOGICAL STUDIES OF VARIOUS SPECIES OF ASPERGILLUS CULTURE ON DIFFERENT MEDIA IN ROOM TEMPERATURE AND 37° C

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Aspergillus is a type of fungi that is medically important due to increasing incidence in Aspergillo-sis. Therefore, it is important to study morphological features of *Aspergillus* to have the correct diagnosis of this infection. In our studies, we aim to learn the different morphological features of *Aspergillus* cultured on three different media. We also study the effect of temperature on the growth rate of the *Aspergillus* species. This study had been carried out on four types of *Aspergillus* species that are *Aspergillus fumigatus*, *Aspergillus niger*, *Aspergillus oryzae* and *Aspergillus ustus*. Each species was cultured on two sets of Sabourouds Dextrose agar (SDA), Potato Dextrose agar (PDA) and cornmeal agar. One set was incubated in room temperature while the other set in 37° C for 72 hours. After their respective incubation period, the macroscopic features of the colonies were studied. Slide culture was prepared for each species and was studied under the microscope for the microscopic features after one week. Photographs were taken and the results were analyzed. The colonies of *Aspergillus* species showed different characteristic features when cultured on different media. We can see that colonies on SDA give good characteristic features. These colonies are the largest and produce better pigmentation and sporulation. Morphological features of colonies on cornmeal agar are not as good as on SDA and PDA. The effect of temperature on growth of *Aspergillus* showed that 37° C is a more optimal temperature for growth of all *Aspergillus* species studied except on *Aspergillus fumigatus*, which grows faster under room temperature. We conclude that colonies of *Aspergillus* species produce better characteristic features when cultured in media that is sufficient to support the growth and *Aspergillus* grows faster under higher temperature (37° C). These criteria give more value in the diagnostic purpose of Aspergillo-sis in the medical field.

KEYWORDS : *Aspergillus sp.*, morphological studies, rate of growth.

PATTERN OF THE HOMICIDE CASES SEEN IN UNIVERSITY HOSPITAL, KUALA LUMPUR

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Aim of Study :

- To retrospectively (in 5 years duration) analyze cases of homicide brought to University Hospital or dying in University Hospital on which autopsy has been performed.
- To prospectively also study cases of homicide where autopsy is conducted in during the 4 weeks of our study.
- To correlate location, pattern and where possible direction of injury with number of assault, type of weapon used- to determine common factors in the pattern of similar kind of cases.
- To review from the pattern, differences from suicidal cases whose post-mortem were conducted here (University Hospital).
- To observe the correlation between fatality and which organs are usually affected.

Methodology :

- Data (1996-2000) were obtained from autopsy reports in the Department of Forensic Pathology.

- A form was prepared with Microsoft Access and the data was transferred there.
- The data was analyzed according to our various criteria.
- The results were prepared using Microsoft Excel.

Result / Discussion :

- Most of the murder cases that occurred in 1998 involved mostly Indians.
- Most preferred weapon for all races is sharp cutting weapon.
- Most common cause of death are stab and slash injuries.
- Most of the victims were in the age group 21-40 years.
- Most common motives were money / material goods and revenge.
- Most of the "police shooting" cases that occurred in 1998 involved mostly Chinese.
- Stab and bullet entry wound mostly located at the chest region, whereas slash injuries are at upper limb and head.

Conclusion:

It can be concluded that there is a pattern that exists in the homicide cases studied. Most of them involved Indians. Motives for majority of the cases were money/material goods and revenge. Majority of the victims were young and they died of stab and slash injuries due to a sharp cutting weapon. Most of these injuries were sustained in the head and chest, respectively. Majority of "gun shot" cases involved police and the victims were mainly Chinese. Majority of the bullet entry wounds were located in the chest region.

KEYWORDS: Homicide, pattern, injury, stab, gun shot .

TOTAL ANTIOXIDANT ACTIVITY OF ALLERGIC SERA AND SALIVA MEASURED WITH A MICROPLATE FERRIC REDUCING ASSAY

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Epidemiologic evidence suggests that allergic rhinitis and asthma are a continuum of disease, which is not wholly surprising as they are both manifestations of allergic disease involving the respiratory tract. The pathogenesis of both these diseases is believed to involve the increased generation of reactive oxygen species (ROS) in patients. We hypothesized that this increased level of ROS in patients with respiratory allergy could result in a lowered level of antioxidant defences due to depletion of antioxidants. The present study aims to measure the total levels of antioxidant activity in the serum and whole saliva of asthmatic and allergic rhinitis patients using a microplate ferric reducing assay, and to compare the values obtained against the antioxidant levels of controls. The ferric reducing assay, otherwise known as the ferric reducing ability of plasma (FRAP) assay, measures the antioxidant power of a sample by its ability to reduce a ferric-tripyridyltriazine complex to its ferrous form, yielding an intense blue colour which has an absorbance maximum at 590 nm. By carrying out the assay using microplates we were able to assay large numbers of samples simultaneously and also reduce the volume of reagent, and more importantly, sample, needed for measurement. We observed that the antioxidant activity of whole saliva was lower in asthmatic and allergic rhinitis patients compared to controls. However, we found that the antioxidant levels in serum of patients with respiratory allergy appeared to be higher than those of our true negative controls. Our findings also suggest that males have a higher level of antioxidant activity than females suggesting the existence of hormonal control mechanism. No consistent findings were noted in an analysis by ethnic group. We also noted the possibility of a diurnal rhythm in the secretion of antioxidants into saliva. We conclude that oxidant stress is in some way involved in the pathogenesis of allergic rhinitis and asthma; however, we are unable to make any suggestions or recommendations regarding the use of antioxidants as adjuvant therapy for patients with these conditions.

KEYWORDS: Antioxidant, saliva, allergy.

HEPATITIS B, HEPATITIS C AND HIV IN HAEMODIALYSIS PATIENT

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Exposure to blood-borne pathogens poses a serious risk to HBV, HCV and HIV infection. We prospectively studied these infections in sera from 945 haemodialysis patients seen at the dialysis centre and ward 8TE in UMMC between January 1995 to Mac 2001. Five ml of whole blood was collected from each patient at six months interval. HBsAg, Anti-HBs, Anti-HCV antibodies and Anti-HIV were detected by MEIA AXSYM (Abbott Laboratories). Western blotting was used for HCV and HIV confirmation. Immunoassay absorbant test for HCV. All statistical analysis was done by SPSS 9.05 for Windows 98. A total of 2235 blood samples from 945 patients were screened. The sample age varied from 8 year old to 98 year old. Among these, 38 (3.7%) patients were found to have HBV infection but only 1 of them developed HBV infection after the haemodialysis. 60 (6.5%) patients were found to have HCV antibody and 16 (1.7%) contacted HCV during haemodialysis. There was only 1 (0.1%) of HIV infection among all the patients. An overall decrease in percentage of HBV and HCV prevalence was observed in this study from 1995 to 2001. In conclusion, haemodialysis patients have higher risk of HBV and HCV infection.

KEYWORDS: Hepatitis B, hepatitis C, HIV, haemodialysis patient.

SURVEY OF MOSQUITO SPECIES IN AND AROUND UNIVERSITY MALAYA MEDICAL CENTRE AND UNIVERSITY MALAYA

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This research project was done to identify the most common species and the most common breeding sites of mosquito in and around (University Malaya Medical Centre) UMMC and (University Malaya) UM. Mosquito larvae were collected from stagnant waters, pools, puddles in and around UMMC and UM. The dates, locations and condition of waters were recorded into collection record chart. These larvae were grown into adult mosquitoes in the mosquito laboratory Parasitology Department. The adult mosquitoes were killed using chloroform. The specimens were then mounted. Specimens were kept in Schmitt box with naphthalene flakes to protect it. Identification was made using keys and descriptions given by Theobald (1901), Say (1823) and Wiedman (1828) identification charts. The most common species was *Aedes albopictus* (59%) followed by *Culex quinquefasciatus* (39%), ending with *Culex mimulus* and *Culex lutzia* with 1% each. The most common breeding places for the mosquitoes were containers (46%), followed by drains (38%), tyres and ground pools each (6%) and bamboos (4%). More females (57.48%) than males (42.52%) were collected. The conclusion that can be drawn from this research is that *Aedes* and *Culex* mosquitoes are the most prevalent species in and around UMMC and UM. Improper disposal of containers have led to the high breeding habitats for these mosquitoes. *Aedes albopictus* is the vector for Dengue hemorrhagic fever and *Culex quinquefasciatus* is the main vector for urban strain of *Wuchereria bancrofti*. Strict control measures need to be implemented in order to curb this problem before it worsens and becomes a nuisance to residence and staff of UMMC and UM. Control measures to solve this problem are proper disposal and destruction of all types of containers, regular fogging and the clearing of blocked drains.

KEYWORDS : Mosquito survey, control measures, mosquito habitat.

PREVALENCE OF ANY PARASITES FOUND IN DIFFERENT SPECIES OF CYCLORRHAPHAN FLIES (DIPTERA)

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The prevalence of any parasites found in different species of cyclorrhaphan flies (Diptera) was studied at three sites: University Malaya, Kerinchi and Pantai Dalam. A total of 161 *Chrysomya megacephala*, 180 *Musca domestica* and 4 *Sarcophaga spp.* had been trapped in those three areas. All adult flies were trapped by using 'rat glue' which is applied on wooden sticks and cardboard. The total number of trap hours for each location was 6 hours. Parasites were extracted from gut lumen of the flies through modified Sheather's sucrose flotation technique. Only *Chrysomya megacephala*, which formed 24.84% of total fly population, trapped in Kerinchi had eggs of the pinworm, *Trichuris trichiura* in the gut lumen. The other species of flies, *Musca domestica* and *Sarcophaga spp.* did not contain any parasites in their gut lumen.

KEYWORD: *Chrysomya megacephala*, *Musca domestica*, *Sarcophaga*, *Trichuris trichiura*, modified Sheather's sucrose flotation technique

QUANTITATIVE ANALYSIS OF PHENOLS IN FRUIT JUICES AND BEVERAGES

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There is currently much interest in naturally occurring phenolic compounds that display biological anti-oxidant properties. Phenolic compounds can be separated into the flavonoids and non-flavonoids. There are 6 subclasses of flavonoids (flavonones, flavones, flavonols, isoflavonoids, anthocyanins and flavan-3-ols), whereas, the non-flavonoids are generally made up of hydroxycinnamates and hydroxybenzoates. These phenolic compounds are naturally present in vegetables, fruits and beverages such as tea and wine. Phenols give different colors and flavors in plants. They also protect the plants from UV light. Phenols have anti-carcinogenic and anti-thrombotic effects that are useful in humans. The objectives of this study were to determine the total phenol content in various fruit juices and beverages and also to determine the type of fruit juices and beverages that have the high total phenol. In this study, we used the Folin-Ciocalteu assay to measure the total concentration of total phenol in various fruit juices and beverages. All the samples were extracted with ethyl acetate to separate the aqueous and organic phases. In this study, we found that ribena juice has the highest concentration of phenols in non-extraction form (738.5 µg/ml). This was followed by guava juice (644.6 µg/ml) and soyabean (607.7 µg/ml); while, chrysanthemum juice has the lowest total phenol content (26.5 µg/ml). As for the beverages, without extraction, Nescafe has the highest total phenol content (1532.3 µg/ml), followed by Lipton tea (646.2 µg/ml) and green tea (635.3 µg/ml). Chrysanthemum tea has the lowest total phenol content (78.1 µg/ml). Identification of drinks containing high level of phenolic compounds together with high anti-oxidant activity can prove useful in encouraging higher intakes of these drinks. Increasing intake of high-phenolic fruit juices and beverages can be used as nutrition guideline, as well as preventive method to limit oxidative damage.

KEYWORDS: Phenolic compounds, flavonoids, fruit juices, beverages, Folin-Ciocalteu assay

INFLUENCE OF ACIDOSIS ON CALCIUM BLOCKING ACTIONS OF NIFEDIPINE ON VASCULAR EXCITATION-CONTRACTION COUPLING IN RAT AORTA

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Calcium channel blockers are currently used in the management of cardiovascular diseases including hypertension and ischaemic organ conditions. However the clinical success of these drugs is less than the theoretically anticipated efficacy. This is thought to be due to blood gas/pH changes associated with organ ischaemia. Therefore, we studied the effects of acidosis on the actions of nifedipine on potassium- or phenylephrine (PE)-stimulated contractions in rat aorta. Aorta rings (3-4 mm in length) obtained from the thoracic/abdominal aorta of male Sprague-Dawley rats were bathed in physiological salt solution (pH 7.4) for 15 minutes. KCl or PE was added to elicit a contraction in the respective rings. The bath was later made nominally calcium-free at pH 7.4 (control) or pH 7.2 (acidotic). After equilibration, the contractile responses to increasing concentrations of calcium in the presence of potassium or PE, with or without nifedipine were recorded. The patterns of responses in potassium- or PE-stimulated aortas were different. Acidosis competitively shifted the calcium dose response curve to the right for the potassium-stimulated aortas. The calcium blocking effects of nifedipine in potassium-stimulated aortas were further enhanced by acidosis with significant depression of the maximal responses to calcium. Reduction in pH was without effects on contraction mediated by PE either in the absence or presence of nifedipine. In conclusion, acidosis selectively reduced the contractile responses to calcium mediated by VOCC and increases the blocking effects of nifedipine.

KEYWORDS : pH; Rat aorta; nifedipine; acidosis; calcium channels; excitation-contraction coupling

PATTERNS OF INJURIES IN MOTOR VEHICULAR CRASH VICTIMS PRESENTING AT UNIVERSITY HOSPITAL, KUALA LUMPUR: A POST MORTEM STUDY

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A retrospective study of motor vehicular fatalities was conducted to observe the pattern of injuries on the body of the crash victims including regions involved on the surface of the body, vital structures injured, and the distribution of the injuries. The records of 610 cases of forensic autopsies of motor vehicular crash victims performed at University Hospital (UH) from 1996 to 2000 were reviewed. Aspects of the type of vehicle involved, cause of death, the day and time of the accident occurred were determined and the injuries were analyzed by using the Abbreviated Injury Scale (AIS). From this study, we found that motorcyclists are the highest fatalities among motor vehicular crash victims presenting at UH during the 5 years duration and they sustained severe injury in all body regions compared to other vehicular victims. Head and neck regions were the regions to sustain severe injury with the mean AIS more than 3 among all crash victims. Mostly young people between the age group 16-30 (63.1%) were involved in the fatal road traffic accidents. From these findings, the role of helmet was assessed by comparing the mean AIS scored of cyclists and pedestrians with the motorcyclists. This study also may be useful as a reference for evaluating the current law for road users and the age eligibility for obtaining driving license in order to reduce road traffic accident involving young people.

KEYWORDS: Patterns of injury, motor vehicular crashes, motorcyclist, AIS, head and neck.

BIOTYPING AND ANTIBIOTIC SUSCEPTIBILITY TESTING OF ENTEROCOCCUS STRAINS ISOLATED FROM INPATIENTS OF UMMC

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This study is aimed at biotyping the *Enterococcus* strains isolated from inpatients of UMMC to identify common *Enterococcus* species causing human infections, and also to determine the susceptibility of these *Enterococcus* species towards vancomycin and ampicillin. Ninety-five strains of presumptive *Enterococcus* strains previously identified by the routine diagnostic lab were retrieved from storage at the temperature of -20°C. These isolates were subcultured onto MacConkey agar. The resulting growth were inoculated in to 4 types (mannitol, arabinose, sorbitol and raffinose) of carbohydrate broths and tested for pyrrolidonylaryamidase reaction and ability to grow in 0.04% potassium tellurite and bile-esculin agar. Of these isolates, 94 strains were found to be correctly identified as *Enterococcus* species, whereas only one isolate was identified as *Streptococcus*. The majority of *Enterococcus* species were *E. faecalis* (55.3%), followed by *E. avium* (19.0%), *E. faecium* (16.0%) and other species (9.7%). Vancomycin and ampicillin sensitivity were done using vancomycin-Azide agar screen plates and disk diffusion method respectively. No vancomycin-resistant *Enterococcus* was detected. 10 isolates were found to be resistant to ampicillin. They were *E. avium* (5), *E. faecium* (2), *E. faecalis* (1), *E. raffinosus* (1) and *Streptococcus* (1).

KEYWORDS : *Enterococcus* biotyping, antibiotic sensitivity.

INJURY AND MORBIDITY SCORING OF ACCIDENT VICTIMS – A CLINICO-PATHOLOGICAL CORRELATION STUDY

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There are various types of trauma scoring systems, such as Glasgow Coma Score, Revised Trauma Score, Abbreviated Injury Score, Injury Severity Score and TRISS. This study attempts to evaluate the efficacy of trauma scoring systems among accident (crashes) victims in the Malaysian population, and to help in audit, quality control, comparing treatment methods and identifying unexpected outcomes of the crashes victims in Malaysian population.

For this study, data was retrieved from the database (1996 – 2000) of UHKL. The data included post-mortem and clinical diagnosis reports of motor vehicles crashes victims. The reports were reviewed and the trauma scoring were done by using various scoring methods, such as Glasgow Coma Score (GCS), Revised Trauma Score (RTS), Abbreviated Injury Score (AIS) and Injury Severity Score (ISS). The scores of clinical diagnosis were compared with the scores from post-mortem findings, in order to determine the efficacy of trauma scoring.

625 cases of motor vehicle crashes occurred between 1996 to 2000. AIS and ISS were done for all cases. GCS were obtained from 117 cases and RTS were done for 52 cases. This is because 453 cases were victims who were brought in death, 55 cases had incomplete records for GCS scoring and 120 cases had incomplete records for RTS scoring.

This study has shown that head injury is the main cause of death among all the crash cases, with highest mean ISS score (52.305) and the lowest mean GCS score (4.67/15), which is significantly different ($p < 0.05$) from other causes of death such as multiple injuries, chest injuries, etc. This study also shows that the ISS score and GCS score can predict the period of hospital stay for crashes victims. The efficacy of RTS is not shown in this study because the data such as respiratory rate, which is needed for RTS is not provided in most cases.

ISS and GCS are shown to be effective and efficient trauma scoring methods in managing motor vehicle crashes' victims. However, the role of RTS as an effective and efficient trauma scoring method has not been demonstrated by its use, here in Malaysia.

KEYWORDS : Score, injury, trauma, accident, morbidity, crashes.

A COMPARATIVE STUDY ON 'DEPRESSION' AMONG UNIVERSITY MALAYA STUDENTS FROM DIFFERENT FACULTIES

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Clinical depression is a serious illness that can affect anybody. It can affect our thoughts, feelings, behaviour and overall health. From National Health and Morbidity Survey 1996, the prevalence of psychiatric illness in the age group of 16-24 years was 11.0%. This was significantly high. Therefore, the aim of our study is to find out the prevalence of depression and the potential factors that contribute to depression among University Malaya students from different faculties. A cross sectional survey was conducted in University of Malaya. The results obtained show that the depression rate as measured using the Goldberg Depression Score, for the four studied faculties is similar. There is also no significant association between depression and perfectionism. Potential causes of depression include: Inability to reach the aimed results in examination, peer problems and pressure due to lack of relationship. Since most of the students are aware of their depression state, it is important to make them recognize depression as a true medical disorder. Hence, seek appropriate help and treatment.

KEYWORDS: Depression, University Malaya students, UM students, University of Malaya, Goldberg Depression Score, perfectionism

BIOTYPING AND ANTIBIOTIC SUSCEPTIBILITY TESTING OF ENTEROCOCCI FROM ANIMAL SAMPLES

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In recent years, the emergence of vancomycin-resistant enterococci (VRE) has been a worrying phenomenon as enterococci are an important cause of nosocomial infections. Not much is known about the epidemiology of enterococci and the presence of VRE of animal origin in Malaysia. Therefore, in this study, enterococci were isolated from animal samples (faeces and meat) obtained from markets around Kuala Lumpur and biotyped based on carbohydrate fermentation, growth on tellurite blood agar and pigmentation. The enterococci were also tested for vancomycin resistance using a screening method on vancomycin containing azide agar (at 6 mg/l) and colonies showing growth were then tested for vancomycin susceptibility by disc diffusion method. The possible vancomycin-resistant organisms were also tested with E-test to determine the Minimum Inhibitory Concentration (MIC) for vancomycin. From our biotyping, a wide range of enterococcal species was found in the animal samples, among which were *Enterococcus pseudoavium*, *E. faecium*, *E. faecalis* and *E. gallinarum* in chicken faeces and *E. raffinosus*, *E. pseudoavium* and *E. faecalis* in beef. A vancomycin-resistant *E. gallinarum* in a sample of chicken faeces was isolated from the 62 samples that were screened. Hence, the isolation rate of VRE is 1.6 %. This falls within the range of isolation rates obtained from various other studies. Recently, it was discovered that the usage of avoparcin, a glycopeptide similar to vancomycin as an animal growth promoter in farms causes selection of VRE. In addition, it was hypothesized that the VRE may be coming from the community into the hospital as opposed to the previous opinion that VRE originated solely from the hospital. It is known that avoparcin is being used in farms in Malaysia. Our study confirms the existence of VRE in the Malaysian environment but we do not know whether the chicken from which it was isolated came

from a farm where avoparcin is used. Therefore, a more detailed study needs to be carried out on the epidemiology of VRE in animals in Malaysia. We also call upon the authorities to monitor closely the usage of avoparcin and other antibiotics in animal feed to prevent a possible outbreak of enterococcal infections.

KEYWORDS: Enterococci, biotypes, vancomycin-resistance, avoparcin

A PILOT STUDY ON THE SEVERITY OF SMOKING ADDICTION AND READINESS TO QUIT SMOKING AMONG ENGINEERING STUDENTS OF UNIVERSITY OF MALAYA

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Objectives: To determine the prevalence of smoking, the severity of smoking addiction readiness to quit smoking and the relationship of smoking and the demographic data among Engineering students, University of Malaya.

Methods: A cross sectional, anonymous random sample questionnaire study. Setting: Faculty of Engineering, University of Malaya. Subjects: 141 Engineering students, University of Malaya. Instruments: Questionnaire study with the Fagerstrom test to determine the severity of smoking addiction and the Prochaska Health Model of Behavioral Change among smokers, to measure the intention to quit smoking. Main outcome measure: Prevalence of smoking, the severity of smoking addiction and readiness to quit smoking.

Results: Out of 150 students interviewed, the response rate was 94%. The prevalence of smoking among Engineering students, University of Malaya was 24.1%. Smokers tend to be male, aged 21 years old, single, Malay, stays out of campus and studying beyond the first year. Most smokers were classified as mildly addicted to nicotine (55.9%). 23.5% were severely addicted and 20.6% were moderately addicted to nicotine. Based on the Prochaska Model, most smokers were identified in the relapse stage (67.7%), followed by pre-contemplation stage (29.4%), contemplation stage (23.5%), maintenance stage (7.1%) and action stage (2.9%). The most popular reason given for relapse is due to addiction to nicotine (47.8%).

Conclusion: Prevalence of smoking among Engineering students, University of Malaya is relatively high. Most smokers are mildly addicted to nicotine. Due to the mild degree of addiction, smokers can be helped to quit smoking by counseling and sometimes through the use of Nicotine Replacement Therapy (NRT). Among smokers who want to quit smoking, many of them relapse. Therefore, medical personnel need to do a follow up with smokers who have quit smoking to ensure that they do not smoke again.

KEYWORDS : Smoking, smoking addiction, smoking cessation, Engineering students

EVALUATION OF STAINING METHODS FOR PATHOGENIC FREE-LIVING AMOEBAE

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Acanthamoebae and *Naegleriae* can cause meningoencephalitis in both immunocompetent and immunodeficient individuals. In this study we identified the best staining methods for both the parasites. We also managed to observe morphological differences between the parasites in various stages. Parasites harvested from pure culture were stained with modified Field's stain, Trichrome stain, Iron Haematoxylin stain and Ziehl-Neelson stain. Included in the report is an explanation to the harvesting method used and a protocol for the modified Field's stain, which we propose as the best stain. The

stained smears were viewed under the light microscope and photographs were taken. *Acanthamoebae* and *Naegleriae* trophozoites stained best with the modified Field's stain. Differentiation of internal structures was good and the nucleus was well demarcated. *Acanthamoebae* and *Naegleriae* cysts stained best with Iron Haematoxylin stain. There was clear nuclear differentiation and various cysts wall characteristics were noted.

MELALEUCA ALTERNIFOLIA (TEA TREE) OIL AS AN ALTERNATIVE ANTIMICROBIAL AGENT FOR METHICILLIN – SENSITIVE STAPHYLOCOCCUS AUREUS AND ESCHERICHIA COLI

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Melaleuca alternifolia, commonly known as tea tree, is indigenous to Australia and New Zealand. The oil obtained from the Australian native plant has been extensively studied and shown to have antimicrobial properties.

The objective of our study was to determine the antimicrobial activity of essential oil from locally cultivated tea tree towards 30 isolates of methicillin-sensitive *Staphylococcus aureus* (MSSA) and *Escherichia coli* (*E. coli*) respectively. The relationship between the concentrations of the oil with its antimicrobial sensitivity was also tested.

The disc diffusion method was used. Tea tree oil was impregnated into the disc in two concentrations, 30 μ L and 60 μ L respectively.

All 30 isolates of MSSA and *E. coli* showed zones of inhibition to tea tree oil. The mean zone of inhibition for 30 μ L of oil was 2.21cm and 2.20cm for *E. coli* and MSSA respectively. Where as, for the 60 μ L, the mean zone of inhibition for *E. coli* and MSSA was 2.71 cm and 2.64 cm respectively.

In conclusion, the tea tree oil shows significant antimicrobial activity against MSSA and *E. coli*. The difference in the zones of inhibition between isolates of the organisms used was not statistically significant. But the difference in the mean zone of inhibition between the two concentrations of oil used was highly significant ($p < 0.001$).

KEYWORDS: *Melaleuca alternifolia* (tea tree) oil, methicillin – sensitive *Staphylococcus aureus* (MSSA), *Escherichia coli* (*E. coli*), antimicrobial activity, disc diffusion.

THE TRENDS IN SURVIVAL OF HIV INFECTED INDIVIDUALS DIAGNOSED AT THE UNIVERSITY MALAYA MEDICAL CENTRE FROM 1988 TO 2001

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AIDS or Acquired Immune Deficiency Syndrome was first reported in 1981 in USA among several cohorts of homosexual men. The aetiological agent of AIDS is the human immunodeficiency virus (HIV), a retrovirus of lentivirus subgroup. HIV infects and kills helper (CD4) T lymphocytes, resulting in the loss of cell-mediated immunity. This predisposes the host to various opportunistic infections and certain rare cancers such as Kaposi's Sarcoma. To date, the spreading of the AIDS epidemic is increasing worldwide at a rate of 15,000 new infections per day. In Malaysia, the first HIV case was detected in 1986 at the University Hospital (now UMMC, University Malaya Medical Centre). As of 31 December 2000, 38,340 cases have been notified to the Ministry of Health.

This is a retrospective analysis of the HIV/AIDS cases diagnosed at the hospital. The Viral Hepatitis and AIDS Laboratory provided us with a list of HIV infected individuals diagnosed from 12 January 1988 to 20 March 2001. Data collection was done at the UMMC Patients Information Centre and the Division of Health of the Kuala Lumpur City Council. All the data were analyzed using SPSS 10.1 for Windows.

A total of 18,199 blood samples were screened starting from 10 January 1987 to 20 March 2001, with 853 found to be HIV positive (4.69%). Of these, 261 have died (30.6%), 496 had been attending the clinics at UMMC (58.1%) but only 16.8% or 143 of them visited the clinics during the past 6 months. Most of these HIV infected individuals were Chinese (56.3%). There was a female to male ratio of 1:5.2 and 69.6% of them were between 21-40 years. Heterosexual transmission was the commonest mode of acquiring HIV infection which constitutes 51.4% of the group.

In conclusion, we found that the predominant route of transmission has switched from injecting drug use to heterosexual transmission. There was also an increase in the proportion of infected females. The duration of survival for those known to have died by 20 March 2001 ranges from 0 days to maximum 2395 days.

KEYWORDS : HIV, AIDS, survival, death, follow-up

IN-VITRO SUSCEPTIBILITY OF CANDIDA ALBICANS TO THE ESSENTIAL OIL OF MELALEUCA SPP (TEA TREE OIL)

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Tea tree oil (*Melaleuca* oil) is the essential oil produced by steam-distilled from leaves of the Australian native plant *Melaleuca alternifolia*. It is becoming increasingly popular as a naturally occurring antimicrobial agent. In this study, the in-vitro activity of tea tree oil against *Candida albicans* was evaluated using disc diffusion method. Of the 48 clinical isolates tested, all were susceptible to 30mL and 60mL of tea tree oil. The mean inhibitory zone size was 24.22mm for 30mL and 41.76mm for 60mL. Disc diffusion method was considered useful as a procedure for screening for anti-candidal activity. In conclusion, these results indicate that tea tree oil is effective as an antifungal agent for *Candida albicans*. It may have significant implications for the future development of tea tree oil as therapeutic agents for fungal infections. Nevertheless, further information regarding the efficacy and safety of tea tree oil in vivo must be sought.

KEYWORDS : Tea tree oil, *Melaleuca alternifolia*, *Candida albicans*, antifungal, susceptibility.

A STUDY ON SOME ISSUES OF BLOOD MANAGEMENT IN THE OPERATING THEATRE, UNIVERSITY OF MALAYA MEDICAL CENTRE

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A study of some issues of blood management was carried out in two parts. Firstly, the anaesthetists and surgeons were required to fill in a questionnaire regarding the minimal pre-operative haemoglobin level based on each of the two cases presented. Secondly, the patients who required blood transfusion during elective surgeries were followed up. The information was obtained by interviewing anaesthetists and surgeons and also by viewing the patients' folders. Indication of blood transfusion (with regard to the percentage of blood loss), quantity and type of blood products being used, estimated blood loss, and complications that arise were recorded. Results for Part 1 of the study showed that all doctors agreed that there was a significant difference between pre-operative haemoglobin for a healthy adult (Case 1) and for

a patient with diabetes and heart disease (Case 2). The commonest quoted minimal haemoglobin was 100 g/l in both cases. Results for Part 2 of the study showed that patients who underwent gynaecology surgeries had the highest rate of receiving blood (probably because they were mainly cancer patients). Our study recorded blood loss and low pre-operative haemoglobin level as indications for blood transfusion. However there may be many other reasons for blood transfusion e.g. extreme age, medical condition and type of surgery. When comparing the amount of blood transfused and the estimated blood loss, it was found that most patients received an amount of blood that was less than or equal to the amount of estimated blood loss. This is appropriate to prevent bad complications, e.g fluid overload. The vast majority of patients in our study did not have any complications during and immediately after blood transfusion.

KEYWORDS : Blood transfusion, blood management, blood loss, pre-operative hemoglobin level, minimal preoperative haemoglobin level, indication of blood loss.

THE EFFECT OF PRE-TREATMENT OF RATS WITH VARIOUS FLAVANOIDS ON THE INVITRO METABOLISM OF DEXTROMORPHAN

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Flavonoid is a class of water-soluble pigments from plants. Flavonoids are found in a wide range of food. In vitro studies with hepatic enzymes in rats have shown that flavonoids have complex effects depending on the chemical structure of the molecule. (Huang *et al*, 1981; Friedman *et al*, 1985; Sausa and Marieta, 1985; Beylor *et al*, 1988; Siess *et al*, 1989; Chat *et al*, 1991). An increase in the number of free hydroxyl groups will reduce the inhibitory effect of flavonoids. Certain substances including flavonoids, have been shown to have the ability to induce cytochrome P450 by enhancing the rate of its synthesis and reducing its rate of degradation. Induction by flavonoids would result in acceleration of the metabolism of drugs resulting in a decrease in pharmacological action of the inducer and also of co-administered drugs. On the other hand, some flavonoids may inhibit cytochrome P450. In this study, flavonoids that are tested for their ability to inhibit or induce the drug metabolizing enzymes are quercetrin at doses of 0.3 $\mu\text{M}/\text{kg}$ and 400 $\mu\text{M}/\text{kg}$, quercetin at 10 $\mu\text{M}/\text{kg}$ and 400 $\mu\text{M}/\text{kg}$ and naringin at 0.3 $\mu\text{M}/\text{kg}$ and 400 $\mu\text{M}/\text{kg}$.

The drug substrate used for this study is dextromethorphan (DTM), which is an anti-tussive drug. This drug is mainly metabolised by O-demethylation to dextrorphan (DO) by cytochrome P450 2D6 (CYP 2D6). The demethylation reaction indicates the marker activity for CYP 2D6.

The aims of the study are to:

1. determine whether the administration of various flavonoids to different groups of rats would affect the activity of cytochrome P450 2D6
2. determine which flavonoid would have a more potent effect on cytochrome P450 2D6 activity when administered to rats

The study was carried out in four different parts namely, the pretreatment of rats, preparation of liver microsomes, preparation of the dextrorphan standard curve and lastly, assessment of CYP 2D6 activity by incubation of liver microsomes with DTM and with an NADPH-generating system followed by quantitation of the amount of metabolite, DO produced.

Quercetrin and naringin were found to be more potent inhibitors at the lower concentration compared to the higher concentration. Meanwhile, in quercetin-pretreated rats, it was found that quercetin at low dose slightly induced CYP 2D6 activity. At the higher concentration, quercetin strongly inhibits CYP 2D6 activity. The overall results indicate that quercetrin is the most potent inhibitor of the CYP 2D6 system especially at the lower dose.

ROLE OF DIPTERANS LARVAE IN ESTIMATING TIME OF DEATH AND PATTERN OF FLIES INFESTATION OF FORENSIC CASES IN MALAYSIA

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Dipteran larvae from a corpse was collected and processed in the laboratory for examination. Specimen was identified as *Chrysomya rufifacies* based on the common characteristics. The specimens were handled for examination using the standard KOH tissue clearing techniques, mounted on Canada Balsam and identified using pictorial keys. The time of death was estimated to be 8 days before the corpse was found, based on the life cycle of *Chrysomya rufifacies* for Malaysian conditions. Pattern of flies infestation on human cadavers was also reviewed from previous cases which indicates that the most common Dipteran larvae to infest decomposing bodies are *Chrysomya sp.*, followed by *Lucilia sp.* and *Sarcophaga sp.*

KEYWORDS : Forensic entomology, maggot.

A STUDY ON 24-HOUR AMBULATORY pH PATTERNS IN THE DISTAL OESOPHAGUS OF HEALTHY YOUNG ADULT MALAYSIANS

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Gastroesophageal reflux is the retrograde movement of gastric contents through the lower oesophageal sphincter (LES) to the oesophagus. It is a common, normal phenomenon, which may occur with or without accompanying symptoms. Gastroesophageal reflux may be divided into two categories, which are normal physiologic reflux or pathological reflux, which occurs in gastroesophageal reflux disease (GERD). Objectives are to investigate 24-hour ambulatory pH patterns in the distal oesophagus of normal healthy young adult Malaysians and to determine the existence of associations between 24-hour ambulatory pH patterns and selected demographic factors. Volunteers had a pH catheter inserted through one of their nostrils until 5cm proximal to the LES. The volunteer then went about his normal daily routine and returned the next morning to have the catheter removed. The recording was then uploaded into the pH analysis software on a computer and the pH patterns analysed and interpreted. From a total of 15 subjects, all had normal De Meester scores ranging from 0.3 to 10.2 except one subject who had a score of 53.9 and was diagnosed as having asymptomatic Gastroesophageal Reflux Disease (GERD) during the study. The refluxes of those who were normal were all physiological. Because of the fact that the number of subjects studied was small, the differences observed between the sexes and races may not be representative of the general population. Therefore no statistical inferences were made for the population of Malaysia. There seems to be a positive correlation between height and the De Meester score but no explanation could be given. Subjects' weight predictably showed a positive correlation with De Meester values because obesity has been known to increase the likelihood of GERD and also exacerbate its symptoms. Among the various races, the Chinese and Indians seemed to have the most number of acid refluxes, the longest of time below pH 4.00, the lowest average 24-hour pH and the highest De Meester scores if compared with the Malays. As a conclusion, although the objectives of the study were not fully met, the first step towards establishing a normal pH pattern for Malaysians has been taken. Existing studies and even the De Meester scoring system is based on Caucasian populations and may not be representative of Malaysians. It is the researchers' sin-

cere hope that a longer and better-funded study be undertaken to complete that which has been started and to establish a normogram for Malaysians.

KEYWORDS: Gastroesophageal Reflux Disease, De Meester Score, pH-metry, lower oesophageal sphincter.

KNOWLEDGE, PERCEPTION AND ATTITUDE STUDY ON ORGAN DONATION AMONG MEDICAL STUDENTS

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Background: Transplantation is a major breakthrough in the fields of medical sciences and bioethics. Over the years, great strides have been made in the areas of surgical techniques, tissue typing and immunosuppressive drugs, thus, vastly improving the rates of successful transplantation. Meanwhile, medical ethics urge for general obligations to the society such as promoting the fair use of resources, preventing harm and promoting health benefit for all. This may include encouraging donation of organs and tissues. Since medical doctors are well equipped with the knowledge on the benefits of transplantation, the duty of promoting organ donation is best done by them. Thus, the purpose of this study is to look into the level of knowledge, perception and attitude on organ donation among medical students as future doctors.

Methods: A survey using self-administered questionnaires was conducted from 23rd of May 2001 to 8th June 2001 that targeted medical students from UM, UKM, and UPM. 250 questionnaires were distributed to medical students from Phase I to Phase IV (S) and 193 were returned, a response rate of 77.2%. Analysis of data includes tests of significance e.g. t-test and chi-square test.

Results: A total of 193 subjects participated in this study with 61.7% from UM, 22.8% and 15.5% from UKM and UPM, respectively. Approximately 50% of them are Malays and Muslims. The most important source of information on organ donation is the printed media. More than 50% of the respondents scored on an average level in the knowledge and perception tests on organ donation. There is a relationship between level of knowledge, but not perception, with the education level in medical schools. Inter-universities differences on level of knowledge have also been observed. Religious and cultural perceptions seemed to influence people's willingness to donate organs: 88.6% of the respondents stated that they will not facilitate any form of illegal transplantation. Out of 69.4% who claimed that they are willing to donate their organs, only 25.4% of them had signed the organ donor card. Campaigns and public education are suggested as the ways to raise public awareness and encourage organ donation in our community.

KEYWORDS: Organ donation, transplantation.

EFFICIENCY STUDY OF CD34+ STEM CELLS HARVESTED BY THE BAXTER FENWEL CS-3000 Aphaeresis INSTRUMENTS

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The yield of stem cell collection after mobilization is crucial for autologous peripheral blood stem cell transplantation. The present study investigated the harvesting of CD34+ cells and attempted to correlate the number of cells with the processed blood volume, time taken and flow rate. That is to study the efficiency of the aphaeresis device and to formulate a working formula to predict the expected CD34+ cell outcome from a given number of CD34+ cells in the peripheral blood and also the time needed to achieve the desired results. A total of 39 procedures from 1997 - 2001 were studied involving 23 patients with malignancies. The procedures were all performed on the Baxter Fenwel CS-3000 cell separation device according to manufacturer's instruction. Peripheral blood stem cells were mobilized by chemotherapy (GM-CSF). The processed blood volume, time taken and flow rate were different, being influenced by the

operator. To avoid bias arising from different operators, only procedures from 1999 – 2001 were study for correlation. This was because from this time period, the procedures were all handled by the same operator. The efficiency of the device was 60.8861%. Data are presented that show a close correlation between the number of CD34+ cells mobilized into the peripheral blood and the number of CD34+ cells collected by leukapheresis ($R = 0.96$). Data are also presented that show no significant difference between the efficiency of collection between males and females. On the basis of all this correlations, a regression formula was calculated that could give an estimate of the total number of CD34+ cells likely to be collected by leukapheresis from a given number of CD34+ cells per micro liter peripheral blood. The linear formula is $A = 4.89B - 4.78$; where A is the estimate of the total number of CD34+cells likely to be collected and B is the given number of CD34+ cells in the peripheral blood. With this we were also able to formulate another equation to estimate the time needed to harvest the estimated number of CD34+ cells. This formula is $A = 8.22 + 4.88 B - 0.04 C$; where A is the estimate of the total number of CD34+cells likely to be collected, B is the given number of CD34+ cells in the peripheral blood and C is the time needed to achieve the estimated number of CD34+ cells. We conclude that the efficiency of the aphaeresis device is high but greatly influenced by the operator. Also with a given number of CD34+ cells in the peripheral blood, one will be able to predict an expected CD34+ cell harvest and also the time needed to achieve it. Knowing the time needed will allow better patient compliance since that the patient does not need to be on the machine for too long and more procedures will be performed each day.

KEYWORDS : Stem cell; aphaeresis; CD34+ Fenwel CS-3000; harvesting; cell separating device.

RETROSPECTIVE, CROSS-SECTIONAL EVALUATION OF AMIKACIN DOSING PROTOCOLS IN NEONATES AT SPECIAL CARE UNIT, UNIVERSITY OF MALAYA MEDICAL CENTRE

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Currently, drug dosage of amikacin in very premature infants is largely based on overseas data due to lack of pharmacokinetic or TDM studies carried out in Asian region. This practice may produce unpredictable drug level due to some possible differences comparing between Asian and Caucasian data. This current study aim is to characterize the dosing pattern for amikacin use in UMMC, for example: dose, dose per kilogram, dosage interval, duration of treatment, peak & trough concentration.

In this study, amikacin dosing protocols in premature neonates were studied. Data collected includes demographic, concomitant medication, pathophysiology, and pharmacokinetic data. Chi-square test was used for comparison of categorical variable while t-test was used for comparison of continuous variable. All the patient enrolled have GA #32 weeks or birth weight #1500g, with the median \pm SD of 29.0 ± 2.4 weeks for GA and the mean \pm SD of 1.2 ± 0.3 kg for birth weight.

Seventy-two percent of neonates received dosage ranging from 6 to 9 mg/kg of amikacin. Interval frequency of 12 hours is frequently used (58.9%), followed by 24 hour dosing (30.5%). The mean trough level achieved by 24 hourly dosing was statistically significant ($P=0.02$) compared to 12 hourly dosing. On the other hand, percentage of the level below 8 mg/l was not statistically different ($P=0.08$). The mean peak level achieved by 24 hourly dosing was statistically not significant ($P=0.42$) compared to 12 hourly dosing. In addition, percentage of level between 20-30 mg/l was also not statistically different ($P=0.91$). From this study, a 24 hourly dosage is recommended as this regimen can carry out its antiinfective effect with less toxicity by producing a slightly higher peak and lower trough level.

Further study is needed to estimate the population pharmacokinetic parameters and identify the important covariates, which modify kinetic response in premature infants in order to develop more precise dosing guidelines.

AN AUDIT OF THIRD GENERATION CEPHALOSPORINS (CEFTAZIDIME & CEFOPERAZONE) AND VANCOMYCIN PRESCRIBING IN UMMC

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Provision of quality care and service, and effective treatment to patients should be the aim of every hospital or health institution. Recently, bacterial resistance, which is closely related to antibiotic usage, is increasing. As a consequence, the aim to provide the best treatment for patients is difficult to obtain. Therefore, an audit was carried out in our institution over 24 days to determine the appropriateness of antibiotics prescribing in University of Malaya Medical Centre (UMMC). Every patient who received the 3 antibiotics (ceftazidime, cefoperazone and vancomycin) during our period of study was monitored to determine the clinical diagnosis, microbiology result and adverse effects after taking the antibiotics. 60 patients who were prescribed 65 courses of antibiotics during the 24-day study period were identified, 28 courses (43.1%) were judged appropriate, 35 courses (53.8%) inappropriate and 2 (3.1%) doubtful. Criteria for evaluation of appropriateness include clinical evidence of infection, with microbiology confirmation and appropriate antibiotic choice; and clinical evidence of infection with defined site of infection (with negative culture), with appropriate antibiotic for the infection and likely microbial pathogens. Whereas, for inappropriateness are clinical evidence of infection with or without microbiology confirmation but inappropriate antibiotic choice (eg: wrong spectrum or narrower spectrum is more appropriate); appropriate antibiotic choice with incorrect dosage, incorrect duration or incorrect dosing schedule; and empirical treatment not discontinued when definitive diagnosis is non-infective and antibiotic not indicated. The audit result can be used as an indicator of awareness of the prescribers to appropriate use of antibiotics. Suggestions to improve efficiency of antibiotic prescription include the introduction and implementation guidelines on antibiotic prescription, and the promotion better use of antibiotics by medical staff (doctors, nurses, pharmacist and microbiologist).

KEYWORDS : Audit, ceftazidime, cefoperazone, vancomycin.

COMPARISON OF ANTISPASMODIC ACTION OF TEA TREE OIL AND ATROPINE ON ISOLATED RABBIT ILEUM

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Tea tree oil is the essential oil produced by steam distillation of the leaves of *Melaleuca alternifolia*, indigenous to Australia. Tea tree has been widely known for its unique therapeutic properties and is used in folk medicine to treat diarrhoea. However, scientific studies on the antispasmodic action of the oil are still lacking. The purpose of this study was to investigate the effect of tea tree oil on contractile activity of isolated rabbit ileum. The oil used in our study was provided by the Malaysian Agricultural Research and Development Institute (MARDI). The effects of various dilutions of tea tree oil were studied on acetylcholine-induced contractions of isolated rabbit ileum, and compared with the effect of a commonly used antispasmodic agent, atropine. An attempt to elucidate the mode of action of tea tree oil was carried out, whereby the acetylcholine dose-response was performed in the presence of three different dilutions of the oil. Results from the study indicated that this oil significantly ($p < 0.01$) caused relaxation of the acetylcholine-induced contractions of rabbit ileum in a dose-response manner. Atropine, a competitive antagonist of acetylcholine at the muscarinic receptors, also showed similar significant ($p < 0.05$) relaxation

effect on the acetylcholine-induced rabbit ileum. The effect of 0.06µg/ml, 0.15µg/ml and 0.30µg/ml of atropine was found to be comparable to 1:64, 1:8 and 1:16 dilution of tea tree oil respectively. Furthermore, the oil also significantly ($p < 0.05$) attenuated the maximum inducible response of the ileal strips to acetylcholine. Thus, this study showed that tea tree oil caused relaxation of isolated rabbit ileum. Its inhibitory effect on the acetylcholine-induced contractions appeared to be non-competitive. These results provided scientific evidence that tea tree oil may have clinical benefits in gastrointestinal disorders.

KEYWORDS : *Melaleuca alternifolia*; Tea tree oil; Essential oil; Atropine; Antispasmodic; Rabbit Ileum

ASSESSMENT OF COST IN UMMC GERIATRIC WARD: IDENTIFICATION OF FACTORS INVOLVED

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Objectives :

1. To identify the factors that affect the cost to run the Geriatric Ward from April 1999 to April 2001.
2. To assess the cost according to the factors involved and to identify the pattern changes.
3. To find cost per unit patient per day based on the total cost spent and the number of bed-day occupancy.

Background :

UMMC Geriatric Ward was officially opened on March 1999. UMMC is the only government hospital that has specialized ward for treating elderly patient who is above 65 years of age with multiple medical conditions. Since it is seen as vital that community resources should be managed for the benefit of the community, therefore cost finding is important in order to determine how well it meets public needs. This involves the techniques that allocate direct and indirect costs where the data or informations extracted from the records are rearranged to obtain the costs of services rendered by the hospital. From here, unit cost (cost per day per patient) can be calculated based on bed-day per patient value. Unit cost is important since it provides a more significant value in order to prepare the next budget for the ward besides helping to improve the management of the ward and also to give the best services to the elderly people.

Methods :

The number of patient admissions, number of staffs and equipments available from April 1999 to April 2001 were obtained from the Geriatric Ward. We acquired information about personnel's emolument from April 1999 to April 2001 from the department that is responsible for the staffs' salary. We managed to find the maintenance cost per year, as well as the billing for one month from the Service Resource. The Management Resource provided us the cost and depreciation rate of the equipments since April 1999. From the Pharmacy, we got the cost of ward stock and in-patient pharmacy from October 2000 to April 2001. Besides, the laundry provided us the cost of linen and housekeeping, and the catering gave us the cost of food services for April 2001.

From the information collected which is based on the retrospective study, it gave us the total cost utilized by the Geriatric Ward. Due to lack of information from certain departments since they could not retrieve the records we wanted, we only calculate the expenditure on February to April 2001 based on the average of total bed-day occupancy of patient admitted during that period of time to get the cost per bed-day.

Results : We figure out the full cost per bed-day is RM 170.74 per bed-day by dividing the average total cost utilized (RM 270791.04) with the average of total bed-day occupancy (1586 days); [February 2001 to April 2001].

Conclusion :

From the result achieved, we conclude that UMMC Geriatric Ward spend about RM 170.74 per bed day. While revenue from the charge on the patient bed day, is only approximately about half of the ward expenditure per bed-day, which is RM 80.

KEYWORDS : Bed-day occupancy, equipments utilization, cost per bed-day, retrospective study

AN EPIDEMIOLOGICAL STUDY OF SNAKE BITES IN SELANGOR, MALAYSIA

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Fear of snakes and their bites is universal, affecting the reaction of both the patient and the doctor. This fear stems mainly from ignorance. It is commonly assumed that bites from venomous snakes are frequently fatal; also, that if no poisoning ensues, the bite must have been inflicted by a non-poisonous snake. Both assumptions are incorrect. In actual fact most snake species are non-venomous. Even bites of venomous snakes do not endanger life in man unless sufficient venom is injected at the time of bite.

The Malaysian Peninsular boasts a variety of snake species that inhabit a spectrum of geographically different landscapes. With rapid development, encroachment of the human species on the natural habitats of snakes have caused an increase concern in the occurrence of snake bite related medical conditions. Studies on snake bite epidemiology have been done before in Kedah and Penang. However there has been no such study conducted in Selangor. Thus, a retrospective study was conducted in 5 hospitals in Selangor, Malaysia to assess the magnitude of this problem in the state from 1997-1999.

There were a total of 341 snake bites for all three years with 121, 122 and 98 cases in 1997, 1998 and 1999 respectively. The largest number of cases was seen in the Semenyih District Hospital with 110 cases, followed by the Tanjung Karang District Hospital with 85 cases, the Banting District Hospital with 56 cases, the Klang General Hospital with 53 cases and the University Hospital with 37 cases. The risk of males getting bitten is about twice that of females. The youngest victim was aged 3 years and the oldest 85 years. The highest incidence was in the age groups of 10-29 years forming 62.5% of the total. The incidence is higher among the Malays than among other races forming about 46.9%. Chinese, Indians and other races formed 10.5%, 28.7% and 11.2 % respectively..

Time of bite was only recorded in 255 cases. In another 16 cases it was stated that the bite took place in the dark hours. Therefore, only 171 cases could be analysed. Most bites took place in the dark forming about 63.4%. The month of the bite was only available in 278 cases. The highest average bite took place in February with 48 cases and lowest in June with 4 cases.

The information about site of bite and type of snake was also only available for 271 cases.

Most bites were in the lower limbs comprising 76.3%, the most being on the foot (107 cases).

Cobras were the overwhelming cause of the identified bites with 31.7%. However most of the cases were when the patient was unsure or did not see the snake (56%).

The signs and symptoms were either localised (61%), systemic (3%), both (22%) or none (14%). The most frequent findings were pain (68%), swelling (49%) and nausea & giddiness (24%). It is noted that 94% of the victims escaped with only negligible or slight poisoning. Only 6% had severe poisoning symptoms. There were two deaths, forming 0.007% fatality rate. One patient died from a cobra bite and the other from a bite of an unrecognised snake.

Management of patients usually consisted of simple analgesics, bed rest and tranquilizers for anxiety. Only 15 patients were given antivenom while 166 were given antitetanus.

QUALITY OF LIFE ASSESSMENT AMONG BREAST CANCER PATIENTS UNDERGOING CHEMOTHERAPY IN UNIVERSITY MALAYA MEDICAL CENTER (UMMC)

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Quality of life is an important consideration in the treatment of breast cancer. The study described the findings of a quality of life assessment among breast cancer patients undergoing chemotherapy in UMMC. Quality of life is defined as a person's own sense of well being, as derived from his/her current experience of life as a whole. In cancer patients, chemotherapy is used either to provide a cure or prolonging life. However, such treatment is frequently associated with several adverse effects posing a considerable deterioration in quality of life of the patient. Based on the purpose of treatment and side effects profile of chemotherapy, the overall success of clinical interventions critically hinges on a balance of these opposing effects.

The objective of the study was to assess the effects of chemotherapy on the quality of life from the patient's perspective. The assessment was performed on the basis of an interviewer-administered survey using modified EORTC QLQ-C30 and QLQ-BR23 questionnaire forms. It was found that the women were affected by the treatment in various dimensions of daily life. Amongst the functional activities, the patients reported good future perspectives, emotional and social functioning and body image. However, a large number of patients indicated that the medical treatment had interfered with their sexual life. Hair loss was rated as the main side effect of the chemotherapy and was experienced by more than 80 % of the patients. Patients also complained of other side effects like fatigue, loss of appetite, insomnia, feeling ill or unwell and nausea. As a conclusion, despite the unpleasantness of the chemotherapy, the survey showed that breast cancer patients attending the oncology unit at UMMC are able to maintain a moderate quality of life.

KEYWORDS : Quality of life, breast cancer, chemotherapy, EORTC.

A RETROSPECTIVE STUDY OF AUTOPSIED CASES OF SUDDEN NATURAL DEATHS IN UMMC FROM JANUARY 1998-JUNE 2000.

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Sudden death is defined as sudden and unexpected death occurring instantaneously or within 24 hours of the onset of acute signs or symptoms. In most of these sudden deaths, a large group is in their most active years. Therefore detail knowledge of the types of disease and their pathology is essential, both for prevention and health planning.

The study was conducted with the aim to analyze different types of sudden natural deaths concentrating on cardiovascular diseases. They were further divided into different categories, focusing on atherosclerosis of the coronary arteries. The pathological changes and frequency of coronary vessels affected by atherosclerosis were further noted.

Two hundred forty cases of sudden and unexpected natural deaths were studied using information from autopsy reports from January 1998 to June 2000 in University of Malaya Medical Centre (UMMC). Cardiovascular diseases accounted for 137 cases (57.0%) in which coronary atherosclerosis and its complications comprised of the majority of sudden cardiac deaths (77.0%). Triple arterial disease (i.e. coronary atherosclerosis

involving all major coronary arteries) appeared to be responsible for the majority of deaths (43.5%). Nearly half of the of the cases (44.1%) of deaths due to coronary atherosclerosis showed acute changes such as hemorrhage, ulceration and thrombosis.

Non-cardiovascular diseases were subdivided into various organ systems namely respiratory system (15.0%), central nervous system (5.8%), alimentary tract (9.2%), genito-urinary tract (0.8%) and miscellaneous (12.1%).

Coronary atherosclerosis accounted for the highest frequency of sudden natural deaths. Other major cause of deaths include cerebral haemorrhage from aneurysm, pneumonia, complications of alcoholic liver disease and malignancies.

Since coronary atherosclerosis is a preventable disease, efforts should be concentrated to prevent it so that the mortality of such diseases in our population is reduced.

KEYWORDS : Sudden cardiac death, cardiovascular disease, coronary atherosclerosis.

DIAGNOSIS OF BACTERIAL VAGINOSIS (BV) BY MICROSCOPY

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The diagnosis of bacterial vaginosis (BV) is essentially clinical and is based on three of the following four criteria: typical discharge, pH > 4.5, positive amine odour test and "clue cells" in a wet smear of vaginal fluid. However, for most clinicians, the diagnosis of BV is usually done just based on laboratory findings. To study the laboratory diagnosis of BV by microscopy, Gram stained smears, dried smears and wet mounts were made from 660 high vaginal swabs. 65 of 660 Gram stained smears, which had BV morphotypes were selected for evaluation and Gram stain diagnosis by 2 evaluators, based on the Nugent scoring system. Interevaluator interpretations were in agreement for 89.2% of the smears but scoring of BV morphotypes was found to be rather subjective. Hence, it was decided that, for a diagnosis of BV to be made, a smear should have a score of 7 or more and more than 40% of epithelial cells must be 'clue cells'. 43 smears fulfilled these criteria, giving a prevalence of 6.5% in the study population. Gram smear microscopy should be correlated with proper clinical evaluation, based on Amsel's criteria. BV was prevalent in different clinical diagnose indicating that clinicians in the UMMC are not aware of BV and not using the clinical diagnosis of BV based on Amsel's criteria. BV was found in patients with pelvic inflammatory disease (4 of 29 cases), preterm labour (2 of 21 cases) and premature rupture of membranes (3 of 169 cases). Microscopic findings of wet mounts were also compared with those of Gram smears. The Gram smear was found to be a more convenient and reliable tool for untrained microscopists to diagnose BV because scoring and evaluating 'clue cells' in wet mounts requires a certain degree of experience. To study the differences in 'clue cells' and BV morphotypes between fresh wet mounts and rehydrated air-dried smears, and also the effect of storage time on 'clue cells' and BV morphotypes, air-dried smears were rehydrated after different periods of time and studied under the microscope. The microscopic findings of rehydrated specimens were compared to those of fresh wet mounts and it was found that there was no difference in the microscopic appearance up to 2 weeks of storage time. 'Clue cells' started to shrink after 1 month and could hardly be seen after 3 months. Rehydrated smears can thus be used to teach the skills of scoring 'clue cells' in wet mounts as long as the smears are not stored for more than a month. To assess the sensibility of performing the amine test and pH measurement on vaginal swabs in the laboratory, one drop of 10% KOH was added to a smear made from the swab to detect the emission of a fishy smell and the pH of the swab was measured with a pH indicator paper. The amine test had a low sensitivity of 44.44% and 7.95% (12/151) of swabs had a "false positive". Every swab tested had an elevated pH to above 4.5. This elevated pH could have been caused by the Stuart's transport medium in which the swabs were placed. Hence, both the amine test and the pH test are not recommended to be used on vaginal swabs received by the laboratory for the diagnosis of BV. They should be used on vaginal fluids freshly obtained from patients in the clinic.

KEYWORDS : Bacterial vaginosis; high vaginal swabs Gram stain; rehydrated dried smears; wet smears; clue cells.

A COMPARISON BETWEEN CLINICAL AND AUTOPSY CAUSE OF DEATH IN UNIVERSITY MALAYA MEDICAL CENTER

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Despite advances in medical technology, the accuracy of the clinical diagnosis has not improved. This study aims to investigate the discrepancies between clinical and autopsy cause of death in University Malaya Medical Center (UMMC). We analyzed autopsy reports from the Forensic Section of the Department of Pathology, UMMC and compare with the clinical cause of death. We divided the cases into natural and unnatural deaths. When comparing the clinical and autopsy cause of death, we again divided the cases into agreement, minor discrepancies, or major discrepancies.

Our population consisted of 132 autopsies in the period from July of 1998 to June of 2000. The ethnic racial breakdown consisted of mostly Chinese (34%), followed by Malay (28%) Indian (22%) and others (16%). For natural cases, the agreement between clinical cause of death and autopsy was 57%. As for unnatural cases, the agreement was much higher (84%). The unnatural cases were further divided into trauma, poisoning and burns with the rate of agreement being 82.5%, 88.2% and 100% respectively. For natural cases, the diagnostic accuracy was different from one category to the other. The agreement was particularly low in hepatobiliary system, infectious diseases and respiratory system. The results showed a certain degree of similarity with other studies done previously. In a few of our cases with discrepancies, an initial accurate diagnosis might have altered the management of the patient significantly and perhaps increased the chances of survival. We found that the rate of agreement increased with duration of hospital stay, except for the duration of hospital stay >28 days. The highest rate of agreement was found in the duration of hospital stay between 8-28 days. The cases with duration of hospital stay less than 1 day were found to have the highest rate of discrepancies.

In conclusion, autopsies will continue to play an important role in hospital audit despite technological advances in diagnostic medicine.

KEYWORDS : Agreement, diagnostic accuracy, autopsy, clinical diagnosis, cause of death.

ADVERSE EFFECT OF PATIENT-CONTROLLED ANALGESIA (PCA) IN ABDOMINAL SURGERY: COMPARATIVE STUDY WITH EPIDURAL ANALGESIA

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Aim: A prospective study to compare the adverse effects of patient-controlled analgesia (PCA) and epidural analgesia in pain management therapy, after abdominal surgery.

Methods: 25 female patients who had abdominal surgery involving laparotomy were selected. 14 patients received PCA whereas the remaining 11 patients had epidural analgesia. The choice of analgesic technique was made by the Acute Pain Service (APS) team of the University Hospital. Patients for both techniques were observed for pain scores, nausea and vomiting, respiratory rate and pruritis.

Results: Pain scores were higher for PCA compared to epidural analgesia during the first 4 hours but subsequent scores were similar for both analgesic techniques. Epidural analgesia showed higher incidence of nausea and vomiting during the first 4 hours. No respiratory depression was observed for both techniques. Only one patient in the epidural group experienced pruritis.

Conclusion : Epidural analgesia provides better pain relief compared to PCA, but with more side effects.

KEYWORDS : Analgesia, PCA, epidural, postoperative, pain.

IDENTIFICATION OF THE TOXIC COMPONENT FROM THE VENOM OF NAJA NAJA KAOUTHIA

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Naja naja kaouthia is a relatively abundant snake in Malaysia and because of its high toxicity contained, its presence creates a public health problem of considerable importance being an interesting subject of research, the venom of *Naja naja kaouthia* was studied in an effort to identify, isolate and characterize the toxic component present. At the same time, preliminary study on the effect of the plant extract of *Curcuma sp.* will be carried out to observe its neutralizing effect on the *Naja naja kaouthia* venom in the nerve-muscle preparation.

Crude toxin was fractionated into its neurotoxic components using chromatographic techniques. The crude toxic was subjected to gel filtration in which, the toxin was filtered through a column of Sephadex G-75. Ion exchange chromatography was conducted on SP Sepharose column. These separation techniques were utilized to achieve the different level of purification of the neurotoxic components.

Gel filtration of crude venom on Sephadex G-75 column and two peaks were obtained. They were designated P1 and P2 but only P2 was shown to be lethal after intravenous tail injection into ICR strain mice. Electrophoresis with sodium dodecyl sulphate polyacrylamide gel electrophoresis (SDS-PAGE) was carried on the crude toxic, P1 and P2. P2 was chosen for further purification and became the main protein toxins of interest in this study.

Ion exchange chromatography on the SP-Sepharose was conducted on P2. The elution profile of P2 yielded four distinct peaks, of which three were found to be toxic and were named P2B2, P2B3 and P2B4. P2B4 was found to be the most toxic. Tests with SDS-PAGE showed that three of the fractions appear in a single protein band.

A pharmacological study using the rat hemidiaphragm preparation was conducted for the most toxic fraction, which is P2B4. The study showed that P2B4 fraction causes death in nerve-muscle preparation. Preliminary study of the *Curcuma sp.* shows no effect in neutralizing P2B4.

KEYWORDS: *Naja naja kaouthia*, venom, toxicity

EXPERIENCE WITH INTELLECTUALLY CHALLENGED CHILDREN IN THE SPASTIC CHILDREN'S ASSOCIATION OF SELANGOR AND FEDERAL TERRITORY

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Objective: To determine the major risk factors of cerebral palsy. To find out the facilities and the programmes that are provided at the Spastic Center. To observe the cerebral palsy children and their activities at the various programmes carried out at the Spastic Center.

Methodology: 41 parents/carers of cerebral palsy children in the Spastic Center were interviewed based on a questionnaire. At the same time, we observed the behavior of the cerebral palsy children, facilities and the programmes that are provided at the spastic center.

Result : n=41. 36 (88%) children were below 15 years old and 5 (12%) of them were above 15 years old. Ratio of male to female is 1.5:1. Majority was Chinese (20), followed by Malay (18), and Indian (3). Most of the parents have a total income around RM1000-4000. The major causes were paranatal factors, which include prematurity, hypoxia and kernicterus. 23 (56%) children can only communicate by vocalizing sounds and

syllables. There was no auditory problem noted by the carers. 10 (24%) children were completely immobile. 5 (12%) were having visual impairment such as strabismus. Half of the children were dependent and unable to self-help to dress, bathe, and go to toilet. Half of them can feed by themselves. Majority of the carers perception of mental ability of the children were moderate to good. 19 (46%) of them cannot write but can doodle while 22 (63%) of them able to write. Most of them undergo therapy that is provided at the Spastic Center such as hydrotherapy, physiotherapy, occupational therapy and also speech and language therapy. 28 of the children use wheelchair, followed by special shoe (14), braces (13) and others use walker, special handle, crutches and communication aid.

Conclusion : Prematurity is the major risk factor followed by hypoxia. There is a wide range of therapeutic activities provided at the Spastic Center and the children have shown some improvement in their speech, movement, care-self activities and learning process.

KEYWORDS: Learning disabilities, cerebral palsy, risk factor.

CAFFEINE AND THEOPHYLLINE LEVELS IN VARIOUS KINDS OF FOOD AND BEVERAGES

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Naturally occurring alkaloids caffeine ($C_8H_{10}N_4O_2$) and its metabolite theophylline ($C_7H_8N_4O_2$) are among the most widely and frequently consumed compounds throughout the world. Caffeine and theophylline can be found in coffee beans, tea leaves, cola nuts, cocoa beans and ilex plant. Its effects include stimulation of central nervous system, cardiac muscle, respiratory system, diuretic delays and fatigue. The aim of the study is to discover the various kinds of food and beverages in Malaysia which contain caffeine and theophylline, and to measure its caffeine and theophylline levels thus creating a comparison. It is also designed to resurface cases where caffeine and theophylline has dangerous effects, especially among children. Thirty-five commonly consumed samples were identified for this study. The methodology included analysis of caffeine and theophylline using Gas Chromatograph Mass Spectrometer (GCMS). The samples were extracted by chloroform ($CHCl_3$) and injected into GCMS. Analysis was done using DB-1 column with 0.25mm Internal Diameter (ID) and 30 meters long using Selected Ion Monitoring mode (SIM). Quantitation was done using a range of standards of caffeine and theophylline concentrations and the respective curves were plotted as area under graph versus concentration (ng/ml). Caffeine content was found to be highest per gram sample in Boh tea (631.51 μ g/g), followed by Kopiko Instant Coffee (480.46 μ g/g) and Kit-Kat chocolate (163.00 μ g/g). On the other hand, highest caffeine content per dose sample was in Red Bull (20450.74 μ g/250ml), followed by Coca-Cola (20059.37 μ g/325ml) and Livita (5550.12 μ g/100ml). Ice Cream Soda (0.16 μ g/g), Hamac sweet (0.16 μ g/g), Vitagen (0.20 μ g/g), Sarsi (0.22 μ g/g) and Dumex 3 Plus (0.73 μ g/g) contained the least amounts of caffeine per gram sample in ascending order. Caffeine content in per dose sample is also lowest in the similar samples with the addition of Fizzy Cola (5.09 μ g/2.7g), Milo (43.00 μ g/30g) and Eclairs (67.78 μ g/4.7g). Theophylline levels were highest per gram sample in Candy Drop (140.62 μ g/g), Silver's Choc. Cake (95.59 μ g/g) and Lipton Tea (54.27 μ g/g). Theophylline content per dose sample was highest in Silver's Choc. Cake (3823.54 μ g/40g), Kit-Kat (1548.09 μ g/17g) and Choc.Fudge Biscuits (754.66 μ g/200g). Lowest content per gram was in Dumex 3 Plus (0.10 μ g/g), Hamac sweet (0.14 g/g) and Eclairs (0.24 μ g/g). Lowest per dose was in Hamac sweet (0.35 μ g/2.6g) and Eclairs (1.15 μ g/4.7g). These results provide direct evidence that commercially produced drinks, food and candies do contain certain amount of caffeine and theophylline. Their content should be monitored for extensive use or extensive adulteration which may lead to toxicity or adverse effects.

KEYWORDS : Caffeine; Theophylline; Central Nervous System stimulants; coffee; alkaloids.

THE SENSITIVITY OF LCx® MYCOBACTERIUM TUBERCULOSIS ASSAY FOR EXTRA PULMONARY SPECIMENS

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The LCx® *Mycobacterium tuberculosis* assay (LCx assay) from Abbott Laboratories (IL, USA), which uses semi-automated ligase chain reaction (LCR) technology for the direct detection of *Mycobacterium tuberculosis* complex was evaluated for extra pulmonary specimens. Results were compared to those of pulmonary specimens. A total of 76 clinical specimens that were found to be free of *Mycobacterium tuberculosis* by culture were used. The specimens included 20 pulmonary specimens (8 sputum, 6 bronchoalveolar lavages and 6 pleural fluids); 20 cerebrospinal fluid specimens; 20 urine specimens and 16 tissues. *Mycobacterium bovis* (BCG strain) was then spiked into each clinical specimen. Of these specimens, 56 were positive in the LCx assay. The sensitivity for CSF, urine and tissues were 70%, 75% and 68.75% respectively compared to respiratory specimens which had a sensitivity of 80%. In conclusion, although the LCx® *M. tuberculosis* assay is only licensed for the diagnosis of respiratory specimens, it can also be effectively used on extra pulmonary specimens provided possible false-negative results are taken into account.

KEYWORDS : LCx assay; extra pulmonary *M. tuberculosis*.

THE EFFECTS OF REPEATED BLOOD DONATION ON THE RED CELL INDICES OF THE REGULAR DONORS

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It is generally accepted that regular blood donations have no harmful effects on the health of the donors provided it is done at not too frequent intervals and test is carried out before each donation. A study from Singapore has shown that there is no statistically significant relationship between frequent blood donation and anemia. However, realizing the state of nutrition and the iron reserve of the population in Malaysia may not be strictly comparable to other countries, an investigation was initiated to study the impact of regular blood donation on the red cell indices of donors. The aims of the study are to determine whether regular blood donations exerted any harmful effects on the donors and to maximize donation time without jeopardizing the health of donors. Besides we also intended to encourage more people to donate blood. A total of 200 blood samples were collected at UH blood bank. 100 blood samples from the first time donors and 100 blood samples from the regular donors. Blood samples were analyzed by using ABX Vegaretic and Abbott Cell Dyne to calculate the red cell indices. The comparison of the two populations is done by using the student t-test and chi-square test. Mean hemoglobin, hematocrit, MCV, MCH, MCHC, RBC count, WBC count and platelet count except RDW show no changes. Subgroup analysis of the various parameters also shows no significant changes in the two populations except RDW. The findings indicate that the hemopoietic system is capable of meeting the extra demand necessitated by the regular donation of blood. It also suggests that iron content of the Malaysian diet is sufficient to compensate the iron loss due to blood donation. The results propel us to the possibility to increase the blood donation frequency to ease blood shortage. RDW may be the best indicator to detect early development of iron deficiency anemia beside serum ferritin. The acceptance of anemic donors raises the suspicion of the reliability of the Corpus Sulphate screening test. The sensitivity of the test should be reviewed to safeguard the health of the donors. The consistency of WBC and platelet count confirms that blood donation only affects the red cells. Limitations in our study include: a) the difficulty of selecting 'real' first time donors. b) The reliability of ABX Vegaretic in determining various parameters. c) The uneven distribution of gender in both populations. As a conclusion, repeated blood donation has no harmful effects on the health of the donors. It is possible to

increase the donation frequency. RDW may be used in detecting the early development of iron deficiency anemia. Blood donation only affects the red cells. The sensitivity of the Corpus Sulphate screening test should be reviewed to avoid anemic donors.

KEYWORDS : Anemia, red cell indices, blood donation.

ANTIMICROBIAL PROPERTIES OF MALAYSIAN APIS CERANA HONEY ON PATHOGENIC MICROORGANISMS

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Honey has always played an important role in various cultures since ancient times. Modern medical practitioners were surprised by the effectiveness of honey in treating various types of wounds.

The antibacterial effects of honey were evaluated by clinical and *in vitro* studies. Clinical documentation of the wound progress was done on patients receiving honey treatment. In vitro studies testing the growth of *Escherichia coli* and *Staphylococcus aureus*, which represents Gram-negative and positive bacteria respectively together with Methicillin-Resistant *Staphylococcus aureus* (MRSA), *Pseudomonas aeruginosa* and *Acinetobacter spp.* which are the pathogenic organisms isolated from wound swabs, were done using macro dilution broth method. Crude honey extracts containing antibacterial organic compounds were tested for antimicrobial properties using the disc diffusion method. Detection of hydrogen peroxide level was done to evaluate the antibacterial properties of honey using analytical test strips. The synergistic effect of various antimicrobial factors of honey was investigated in this study.

Positive antibacterial activities were observed in both ATCC bacterial strains and in all three pathogenic microorganisms. High sugar concentration was found to inhibit bacterial growth at high honey concentration. Presence of other antimicrobial factors were shown to inhibit bacterial growth with complete growth inhibition occurring as low as 10% dilution of honey except for *Acinetobacter spp.* which occurs lower. Hydrogen peroxide produced by glucose-oxidase system was shown to have an antibacterial effect at the level present in honey samples (500-2000µg/l). Honey's pH (3.2-4.5), which is acidic and organic compounds of honey such as polyphenol, flavonoid and glycoside also contributed to the total antibacterial activity of honey.

Enzymatic debridement, hygroscopic properties, viscosity, non-toxic, non-irritant, self-sterile and non-adhesive properties plus high patient compliance promotes wound healing. The wounds were sterile within 7-10 days after daily honey application.

The existence of these different antibacterial and wound healing factors makes honey a save and suitable alternative in wound management.

KEYWORDS : Antibacterial, wound healing, pathogenic organisms, hygroscopic, hydrogen peroxide, organic compounds.

THE FUNCTION OF CRYPTOCOCCAL CAPSULE IN HOSTILE ENVIRONMENT

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The objectives and the aims of the study are to have a better understanding of the protective role of the polysaccharide capsule in *Cryptococcus neoformans* and to understand the relationship between the envi-

ronment and the capsular gene. At first, *Cryptococcus neoformans* is subcultured on SDA agar (in vitro specimen). A cryptococcal suspension is prepared and inoculated into the mouse. A few days later, the mouse is killed and the peritoneal fluid is taken. The peritoneal fluid (in vivo specimen) is subcultured on SDA. The morphology of the colonies is observed and compared with the in vitro specimen. The peritoneal fluid and the in vitro specimen are stained with India ink. Size of capsule is observed and compared. From the study, the yeast cells of the peritoneal fluid show thicker capsule compared to the in vitro specimen. The colonies of the in vivo specimen are more mucoid. Inside the mouse, the genes of the cryptococcal cells are triggered to produce larger capsule. Capsule can resist phagocytosis by macrophages, monocytes and neutrophils.

KEYWORDS : Capsule, *Cryptococcus neoformans*, capsular gene

APPLICATION OF IMMUNOHISTOCHEMISTRY IN DIAGNOSIS OF TUBERCULOSIS

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Commercially available polyclonal anti-BCG antibody raised against *Mycobacterium bovis* was used to detect *Mycobacteria* infection in infected tissue sections from 30 cases of histologically confirmed tuberculosis and histologically highly suspicious tuberculosis. One case of confirmed tuberculosis with abundant of antigens in the tissue was used as a positive control and stained with immunohistochemistry method during each experiment. Sections stained with immunohistochemistry (IHC) method by using anti-BCG antibody were then compared with Ziehl-Neelson (Z-N) stained tissue sections. Generally, two major type of antigen distribution were found with the IHC method. The first type of antigen distribution was found in the area with abundant epithelioid macrophages. IHC staining particles and also some diffuse staining were observed in the cytoplasm of macrophages. The second type of antigen distribution was found in the caseous necrosis area in which clusters of antigen-staining masses were found in contrast. Four out of 15 cases of *Mycobacteria* infection where the Z-N stain were positive also stained positive with IHC method. Two out of 15 cases of highly suspicious tuberculosis, in which the Z-N were negative had immunoreactive organism and antigen with the IHC method. From our study, the sensitivity of the IHC method was not as good as what had been expected, but in IHC positive cases, it could stain more antigen and organism per tissue section compared with the same tissue section stained with Z-N stain. In addition, IHC positive staining was also more readily to be picked up even with the scanning magnification (X100). Thus, both Z-N stain and IHC method are suggested to be used together as routine diagnostic method of tuberculosis.

KEYWORDS : Immunohistochemistry; *Mycobacterium*; *Bacillus Calmette-Guerin* [BCG]. Tuberculosis

AN ASTHMA EDUCATION VIDEO FOR THE PATIENTS OF THE UNIVERSITY OF MALAYA MEDICAL CENTRE (UMMC)

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Objective: To produce an easy-to-understand video about asthma for the purpose of patient education in the University of Malaya Medical Centre (UMMC).

Methods: Printed and audiovisual materials currently available were collected and studied to source ideas for the video. Specific information and skills that are vital to asthma patients were identified. A simple script with no written language was written. Quotations were sought from various companies, both private and government, regarding cost of producing video and the best quotation was chosen. After that, filming was carried out including scenes of home, emergency department and the doctor's office in the hospital. Following that, editing of the video, which includes cutting out unimportant footage, arranging

the sequence of events as well as inserting transitions so that the flow of the story is smooth. Next, animated diagrams were inserted to explain certain important concepts. Next, the sequence of events in the video was reviewed to make sure that all visuals were smooth flowing. Then, dubbing of the video in the different languages was carried out. Last but not least, music was inserted into any part which did not have any voice-over.

Results : A 10 minute video that provides important information about asthma. The video is available in 3 major languages and 1 dialect, that is Bahasa Melayu, Mandarin, Tamil and Cantonese. Therefore, this video can be used by doctors as a tool for patient education. It can also be used to educate the general public about asthma.

Conclusion: Even though we were very particular about the usage of simple language to convey the message, some people may not understand the video. Therefore, it is important to carry out an assessment of the effectiveness of this video in future.

PAIN PROFILE OF CANCER PATIENTS IN UNIVERSITY OF MALAYA MEDICAL CENTRE (UMMC), KUALA LUMPUR

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Objectives: To collect demographic information and evaluate the pain severity of cancer patients in UMMC, KL and to identify the factors responsible for pain experienced by them.

Materials & Methods: One hundred and fifty cancer patients in UMMC were randomly selected and interviewed using a set of questionnaire. Pain intensity was determined by Numerical Rating Scale (NRS).

Results : Of these 150 subjects, 121(80.67%) reported pain. The mean age was 50.46 ± 12.93 years. The male to female ratio was 1: 3.7. Majority (62%) of the subjects was Chinese. Of a total 121 subjects with cancer pain, 52 (43%) had mild pain, 36 (29.8%) moderate pain and 33 (27.3%) severe pain. Breast and genitourinary cancers were the two most common diagnoses in subjects reporting pain with percentage of 29.8% for each. Subjects of genitourinary cancer more frequently reported pain, which was 90%. The most common location of pain was pelvis and perineum (29.8%, n = 36). Seventy subjects (57.9%) had pain directly due to their tumour while 47 (38.8%) due to cancer treatment and postoperative pain. Fifty-six patients (46.3%) reported their pain felt worse when they were lying down or sleeping. No subjects took alcohol or smoked after being diagnosed of having cancer. Fifty-seven (47.1%) subjects exercised and from this number 63.2% subjects felt relieved after exercising.

Conclusion : Overall, there are no significant difference in age, sex and ethnicity among the subjects with cancer pain. Mild pain is more common in breast and genitourinary cancer patients while severe pain in head and neck and gastrointestinal cancers. Lying down or sleeping pattern was the main factor contributing to the unrelated cause of cancer pain.

Key words : Cancer pain, Pain severity, Pain measurement.

CD34+ CELL DOSE IN PERIPHERAL BLOOD STEM CELL TRANSPLANT (PBSCT) AND OUTCOME WITH REGARD TO ENGRAFTMENT AND GVHD

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Background: After autologous or allogeneic transplants of peripheral blood stem cells (PBSCs), an adequate dose of CD34+ cells is necessary to ensure early and sustained hematopoietic engraftment and favorable clinical outcome.

Purpose : To evaluate the relationship between CD34+ cell dose in PBSCT and the rate of engraftment as well as occurrence of GVHD as a result of the transplant in UMMC setting. We are interested in seeing if the results of various studies, which show that high CD34+ cell dose result in rapid engraftments are applicable to the patients who have undergone PBSCT in UMMC. We are also going to try to identify the optimal CD34+ cell dose that is needed to achieve rapid and reliable engraftment in most patients to reduce the use of supportive measures, shorten hospital stay and reduce costs. In terms of GVHD, we are going to evaluate the possibilities of high doses of CD34+ cells as a risk factor for GVHD.

Patients & Methods : Between March 1997 and April 2001, 35 paediatric patients with hematologic malignancies in remission or relapse who received myeloablative or non- myeloablative therapy followed by transplantation of a G-CSF-mobilized autologous or allogeneic PBSCs were evaluated. Medical records were reviewed to collect relevant data (eg: CD34+ cell dose, number of days for TWBC to exceed 1000/ μ l and 2000/ μ l and occurrence of GVHD). A range for CD34+ cell dose was created (group 1: $< 2.0 \times 10^6$, group 2: $> 2.0 \times 10^6$) and the median day after transplant when TWBC exceeds 1000/ μ l and 2000/ μ l and platelet count $> 20,000/\mu$ l was calculated. Mann-Whitney test (a non-parametric test) was used to compare these independent samples, Data regarding GVHD was analysed using Chi-Square test.

Results : Of the 35 patients, we found out that patients infused with CD34+ cell dose of $>2.0 \times 10^6$ cells/kg had a faster engraftment to TWBC $>1000/\mu$ l (11 days v 12.5 days; $P=0.651$); TWBC $>2000/\mu$ l (14 days v 48 days; $P=0.006$); and platelet $>20,000/\mu$ l (13 days v 28 days; $P=0.191$) compared to those infused with $<2.0 \times 10^6$ cells/kg. When looking at autologous setting alone, we observed the same trend in the rate of engraftment as above ($P=0.128$, $P=0.079$ and $P=0.094$ respectively). In allogeneic setting, patients who received $>2.0 \times 10^6$ cells/kg had a significantly faster engraftment ($P=0.043$) to a TWBC $>2000/\mu$ l (16 days v 45.5 days). GVHD occurred in 6 out of 22 evaluable patients (allogeneic transplants). GVHD occurred in 2 out of 4 patients who received $<2.0 \times 10^6$ cells/kg and 4 out of 18 patients who received $>2.0 \times 10^6$ cells/kg ($P=0.259$). However, many of these results are not significant due to the small sample size studied and incomplete duration of follow-up.

Conclusion : The results in this study provide further confirmation of the efficacy of higher CD34+ cell dose in determining rapid and sustained engraftment. However, the effect of CD34+ cell dose on occurrence of GVHD is still questionable. We felt that further studies evaluating CD34+ cell dose in a larger sample and longer period are needed to gather more promising results.

KEYWORDS : Peripheral blood stem cell; allogeneic transplantation; CD34+ cells; GVHD.

PATENCY STATUS OF CORONARY ARTERIES AMONGST YOUNG MALAYSIANS BY POST-MORTEM CORONARY ANGIOGRAPHY

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Coronary arterial disease is gradually emerging as a very frequent cause of sudden death in males in the productive age group. Recent trends show younger individuals, without any previous history to suggest coronary occlusion or arterial narrowing suddenly dying. A review of the incidence of coronary atherosclerosis or coronary arterial disease, coronary arterial thrombosis and coronary arterial occlusion besides myocardial infarction showed alarming trends especially amongst the Indians (45%) and Chinese (45%) while the majority of sudden cardiac (i.e. cases dying before any medical attention could save them or proper diagnosis could be made) were in the age range of 36 - 55 (mean age of 3 races = 45), a small but significant number of cases were also seen in the age range of 18 - 35.

This study was undertaken to determine the feasibility of screening hearts from post-mortem coronary angiography of young Malaysians that is between 15 – 40 years for the status of the narrowing of coronary arteries even though these was no past history of any cardiac event. Hearts were carefully dissected during the course of the routine autopsy. When both the coronary ostia were cannulated and the coronary arteries were then ligated with the Foleyes catheter in situ. The vessels were first flushed with warm saline till there was clear return. Gelatin was dissolved in hot water, barium sulfate and little starch next dissolved in the same solution. This solution was now perfused into the vessels until the epicardiac branches were sent to be distended by these thick white dye and moderate resistance was felt in the perfusing syringe. The heart was immediately chilled, quickly taken across to radiology for angiography, then brought back and dissected as per normal routine of autopsy. A case where the radiography facility was not immediately available the complete arterial tree with the stump of aorta dissected and fixed in formalin after chilling to set the gelatin substrate for subsequent radiography on weekdays, while the heart was returned to the body. The post-mortem coronary angiography was successfully proven to be a good tool for demonstrating the size of the lumen. The cases where there were luminal narrowing, transverse sections of the vessels showed good correlative atherosclerosis thickening and partial occlusion of the vessel wall.

A total of 6 cases were collected. One case had shown a negative filling defect in his right coronary artery. Transverse sections had found that there was narrowing of a corresponding front part of the right coronary artery.

KEYWORDS: Post-mortem angiography, young Malaysians, coronary artery.

STATISTICAL ANALYSIS OF BIRTH DATA (LIVE BIRTHS) IN UMMC FROM 1ST JANUARY 2000 TO 31ST DECEMBER 2000

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Birthweight is used widely to monitor the health and progress of children, particularly in the first year of life. It has long been a subject of clinical and epidemiological investigation since the cases of low birthweight infants begins to rise rapidly nowadays. Therefore, this study was carried out to (i) analyse data of birthweight by ethnic group in year of analysis (ii) evaluate number of babies with low birthweight and babies who weighing more than 4 kg and (iii) examine birthweight in relation to the period of amenorrhea (gestational age). The birth data of 5174 babies who were born from 1st January until 31st December 2000 at the University Hospital have been collected and analysed. There seem to be a positive correlation between the mean birth weight and ethnic groups ($p < 0.05$), mean birth weight and Hemoglobin concentration of the mothers ($p < 0.05$), mean birth weight and maternal age ($p < 0.05$) and height ($p < 0.001$), mean birth weight and period of amenorrhea ($p < 0.05$), mean birth weight and gravidity ($p < 0.05$) and mean birth weight and socioeconomic status of the mother ($p < 0.05$). As a conclusion, mean birth weight of Chinese babies (3060 ± 552 g) were significantly heavier compared to Malay (3018 ± 536 g) and Indian babies (2952 ± 597 g). At term (37-42 weeks of gestational period), incidence of low birth weight is highest among the Indian babies (9.5%), followed by Malay babies (7.5%) and Chinese babies (6.3%). Overall, the incidence of macrosomia (more than 4 kg) was 2.4% of the total live births.

KEYWORDS : Birthweight, Low birthweight, Ethnicity, Gestational age.

VALUE OF PAP SMEAR IN THE DIAGNOSIS OF CANCER AND PRECANCER OF THE UTERINE CERVIX – A ONE-YEAR RETROSPECTIVE ANALYSIS

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Cervical cancer ranks as the second leading cancer and one of the leading causes of death among women worldwide. However, death rate has declined by two-thirds due to the development of Pap test by George Papanicolaou in 1941. The goal of PAP smear is to screen for cervical intraepithelial neoplasia (CIN) before it progresses to cervical carcinoma.

The aim of this study is to assess the value of the PAP smear in the diagnosis of cancer and precancer of the uterine cervix. This study was done as a retrospective analysis of cases from University Hospital diagnosed histologically as carcinoma of cervix and cervical intraepithelial neoplasia (CIN) in the year 2000. Reports of PAP smear and cytological reports of these cases were retrieved from the Department of Pathology, University Malaya. The cytological diagnoses were correlated with the histological diagnoses and both histology and cytology slides were reviewed with the supervisor. A total of 70 cases were analysed and these cases were divided into 2 categories, namely cases diagnosed histologically as carcinoma of cervix (Group A) and cases diagnosed histologically as CIN (Group B).

In this present study, the highest incidence of both invasive carcinoma of cervix as well as squamous intraepithelial lesion (SIL) occurred in the 5th decade. The race wise incidence of both carcinoma of cervix and SIL cases showed predominance in the Chinese. The sensitivity of PAP test is 90.2% for invasive carcinoma of cervix and 73.3% for SIL. PAP test was also able to categorise the type of malignancies and the grade of CIN in the majority of the cases. PAP test showed 100% accuracy in the diagnosis of Adenocarcinoma in situ (AIS) and also uncommon malignancies of uterine cervix such as small cell carcinoma and metastatic carcinoma.

As a conclusion, the PAP test is a sensitive investigative modality for the screening and diagnosis of squamous and glandular malignancies of cervix and a valuable screening modality for preinvasive squamous and glandular lesion.

KEYWORDS : PAP smear, carcinoma cervix, cervical intraepithelial neoplasia (CIN) / squamous intraepithelial lesion (SIL), cytology.

THE EFFECT OF PRETREATMENT OF MICE WITH PLANT EXTRACTS ON SLEEPING TIME INDUCED BY PENTOBARBITONE

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In the study conducted, brinjal (*Solanum spp.*), bitter gourd (*Momordica charantia*), ladies finger (*Hibiscus esculentus*) and 'gambir' were used. The aim of the study is to determine the effects of sample extracts on the liver metabolizing-enzyme, cytochrome P-450 by evaluating the length of sleeping time of mice induced by pentobarbitone. The effects of different doses of the sample extracts on the activities of liver metabolizing-enzyme were then determined by using the positive samples. 4 groups of mice pretreated with standard dose of sample extracts (0.02 ml of 5 mg/ml) and 1 control group of mice pretreated with saline for 4 consecutive days. On the 5th day, pentobarbitone (0.005 ml of 8 mg/ml) was administered intraperitoneally into mice and the sleeping time induced by pentobarbitone was determined. From the result, samples extracts that showed significant effects towards liver metabolizing-enzyme activities were then again used for further tests at low dose (0.0125 ml of 2 mg/ml) and high dose (0.04 ml of 10mg/ml). From the study, we found that brinjals inhibit while ladies fingers induce the liver metabolizing-enzyme significantly com-

pared to control at standard dose. Bitter gourd and 'gambir' showed no effect on the sleeping time. Therefore brinjals and ladies fingers were chosen for further study at low and high doses. It showed that at high dose, ladies fingers induced the enzyme but at low dose the induction effect is further enhanced. This is an inverted log dose response. As for brinjals, at high dose it inhibit the enzyme but at low dose, the inhibition is reduced.

Keyword : cytochrome P-450, liver metabolizing- enzymes, plant extracts, log dose response

PATIENTS' FEEDBACK ON THE PROCEDURE OF FINE NEEDLE ASPIRATION CYTOLOGY IN UNIVERSITY MALAYA MEDICAL CENTER

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Introduction: Fine needle aspiration cytology (FNAC) is a percutaneous procedure that uses a fine gauge needle and a syringe to aspirate cells from lesions in any part of the body. A cytological diagnosis is made which contributes towards patient management. An important advantage of this procedure is that it is a quick, reliable and relatively inexpensive method in making a diagnosis. Patient compliance is usually high. Adequate sampling is important and relies heavily on the experience of the aspirator.

The purpose of this survey is to obtain patients' feedback on general acceptance of this procedure.

Materials and methods : This survey was carried out at the general (head and neck) and breast FNAC clinic in University Malaya Medical Center (UMMC) for three weeks by means of an interviewer-administered questionnaire. The questionnaire was designed to get feedback from the patients regarding general aspects of FNAC such as feeling of pain and anxiety, diagnosis, relief after the procedure, affordability, quality of FNAC service and patients' general comments. The patients were interviewed immediately after they had undergone the procedure. The data collected was compiled and analyzed using Microsoft Excel 2000.

Results and Discussion : A total of 60 patients were interviewed of which there were 21 (36%) Malays, 20 (33%) Chinese, 17 (28%) Indians and 2 (3%) foreigners. Of these, 88% were female and the remainder were males. The age range was 15 years to 83 years. 53% of patients said that they felt anxiety before the procedure. 65% of patients felt pain at insertion of the needle whilst 35% felt no pain. Out of the 65% only 33% of them wanted local anaesthesia. Of all the patients, 58% felt relieved after the procedure whilst 42% were not relieved. Of the total, only 20% of patients were told the preliminary diagnosis immediately after the procedure. This was consistently practiced by one of the pathologist. Of this 20%, 67% of patients felt relieved to know the diagnosis whilst 33% remained worried about their condition. 33% of patients thought that hospital charges for FNAC was reasonable whilst 23% thought that it was expensive. 44% of patients were government or private company staff where fees were either waived or reimbursed by their employer. Regarding the quality of services carried out by the FNAC team, 92% of patients said that the service was good. 8% of patients stated that service was "below par" and complained about the long waiting time.

TESTING OF DIFFERENT β -LACTAM RESISTANCE PHENOTYPES IN ESCHERICHIA COLI

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β -lactamases have been identified as the major cause of β -lactam antibiotic resistance in *E. coli*. The objective of this study was to study the pattern of β -lactam resistance in *E. coli* and the probable mechanisms

responsible for it. A total of 103 presumptive *E. coli* isolates were collected from urine, blood, swabs and pus specimens and were subjected to biochemical tests (citrate utilization, TSI, MR-VP and Indole) to confirm their identity. 87 were confirmed to be *E. coli* and susceptibility profiles were obtained using the disk diffusion technique. Susceptible, intermediate and resistant categories were established based on the diameter of inhibition zones as set by the National Committee for Clinical Laboratory Standards (NCCLS). The isolates were then classified into 6 phenotypes according to preset criteria. Selected isolates were also subjected to isoelectric focusing (IEF) and polymerase chain-reaction (PCR) tests to detect the different β -lactamases. TL phenotypes have the highest percentage of isolates (40.2%) followed by S (31%), TH-IRT (16.1%), ESBL and CP (3.4% each), and TI (2.3%). One isolate showed characteristics of both ESBL and CP phenotypes and two isolates were classified as inconclusive. IEF and PCR study showed a predominance of TEM and SHV enzyme producers.

KEYWORDS: β -lactamase, β -lactam, resistance, *E. coli*, Phenotype

IMMUNOPHENOTYPIC CHARACTERISTICS OF ACUTE LEUKEMIA DIAGNOSED IN UHKL, A 2-YEAR RETROSPECTIVE STUDY WITH CORRELATION AGAINST MORPHOLOGY AND PRESENTING BLOOD COUNTS

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The purpose of this study was to examine the immunophenotypic (IP) characteristics of cases of acute leukemia diagnosed in UHKL for the past two years, and relating this IP data to the morphology (FAB subtype), presenting blood counts and demographic data. This study also intended to look at the pattern of immunologic marker expression of these cases and to compare this pattern with results from other previous studies. Our final objective was to analyse incidence of aberrant expression of immunologic markers in the same cases.

We worked towards meeting these objectives by firstly, identifying and selecting patients diagnosed with acute leukemia within the past two years. We then looked at each case's FAB subtype, presenting blood count and IP data, obtaining this information from the Flow Cytometry and Hematology labs of UHKL. Finally, we analysed the data statistically and also by comparing our results with results from other previous studies.

We found that the IP characteristics were usually consistent with the morphology and presenting blood counts. For example, we found that our M3 cases showed relatively low white blood counts and platelet counts (2nd lowest) compared to the other 10 subtypes, which is typical for this subtype. Also, we observed that all our acute lymphoblastic cases showed a low median age (L1-8 years, L2- 10 years, L3- 6 years).

The pattern of immunologic marker expression that we observed was also found to be fairly consistent with results from other previous related studies. For instance, our M0 cases showed a strong negativity towards CD13 whereas M2 cases showed a 100% presence of these two combinations:- CD34+CD14- and CD13+CD14-. Besides that, a high proportion (75%) of our M4 and M5 cases were CD14+. Moving on to our M3 cases, we discovered that merely 1 in 6 of our M3 samples showed HLA-DR positivity which is fairly acceptable since we expected a total lack of its expression. All these above findings are consistent with a previous study by Ursula Creutzig et. al, 1995. Another observation that we made was that CD 10 expression was totally limited to L1 and L2 subtypes (74%) only. Another point to note is that expressions of CD3, CD5 and CD7 were limited to only L2 cases (which are T-cell lineage markers).

We also observed some instances of aberrant expression of immunologic markers - 17% of M3 cases expressed HLA-DR, 33% of M3 cases expressed CD34, 66% of M4 cases expressed CD34. 29% of L1 cases and 6.25% of L2 cases expressed CD33 (a myeloid marker). Another interesting example we encountered was one case of CD7 expression in an M1 case.

The small size of our sample (n = 49) would have undermined the confidence level of our results had we Decided to do a statistics-based study. However, we still performed some significance tests to confirm

our suspicion. Firstly, we subdivided all our subtypes into three major groups:- M3, non-M3 and lymphoblastic groups. We then did paired t-tests comparing these three groups within three categories:- hematocrit value, white blood count and platelet count. We also did c2 tests, comparing the expression of three lineage independent markers (CD45, CD10 and CD34) between acute myeloid and acute lymphoblastic leukemia cases. All the t-test results proved statistically insignificant while the c2 tests showed mixed results. Therefore, we precluded statistical analysis from our study, and instead we presented our results in a descriptive manner, as can be seen from our results and discussion.

KEYWORDS : Immunophenotyping , acute leukemia , aberrant expressions.

IN-VITRO SUSCEPTIBILITY OF METHICILLIN-RESISTANT STAPHYLOCOCCUS AUREUS (MRSA) TO TEA TREE OIL

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The purpose of this study was to determine the usefulness of tea tree oil (which is locally grown in Malaysia) as an alternative treatment to the MRSA carriage. This is done by determining the in vitro susceptibility of methicillin-resistant *Staphylococcus aureus* (MRSA) by disc diffusion method.

50 strains of MRSA isolated from patients in UMMC were tested. The test was performed in duplicate. Two different volume of tea tree oil (30µL and 60µL) were impregnated onto two discs respectively. Mean diameters of inhibition zone were determined after incubation at 37°C for 24 hours.

In this study, the mean inhibitory diameter of the disc, which was impregnated with 30mL tea tree oil was 26.72 mm whereas for the disc which was impregnated with 60µL was 29.36. From the result obtained from this study, it was found that tea tree oil proved to have an inhibitory effect on MRSA.

KEYWORDS : Tea tree oil, MRSA, disc diffusion

CASE STUDIES AND IMPACT OF SEXUAL HARASSMENT IN UNIVERSITY OF MALAYA

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This study is to find out responses, experiences as well as coping strategies of sexually harassed victims in University of Malaya and the impact on the various aspects of the victim's life as the aftermath of the sexual harassment. A guideline of interview was prepared based on our literature review. 3 female staff and a male student agreed to be interviewed, and the consequences of sexual harassment on their psychological and physical health as well as their career or academic status were noted. The trends of the impact of the incident in six categories were studied. The categories were: (1) General impact of sexual harassment on victim's career/ academic/ economic status, psychological and physical health and personal relationships, (2) Impact of different categories of sexual harassment i.e. sexual coercion and sexual annoyance, (3) Victim's perception on the offensiveness of the perpetrator's behaviour, (4) Victim's reaction towards the sexual harassment, (5) Victim's relationship with the perpetrator, and (6) Evaluation of victim's psychological adaptation to the sexual harassment. Sexual coercion have implications on the career and economic development of the victim, while sexual annoyance produced disturbances in the victims' physical and psychological health. Public awareness of these issues needs to be raised to encourage victims to make a report and thus, seek help and support. They need to share their feelings with people who

care. Sexual harassment does occur in University of Malaya. The victims suffered from various forms of disturbances in their psychological and physical health, and their career development.

KEYWORDS : Sexual harassment; Institutions of Higher Learning; University of Malaya; Sexual Annoyance; Sexual Coercion

STUDIES ON TYPES OF HEPATIC ARTERIES AND CYSTIC ARTERY VARIATIONS WITH THEIR RESPECTIVE ORIGIN, COURSE AND RELATIONS TO THE BILIARY SYSTEM

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Nah Seang Hoo, San San Thwin

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19 cadavers from the Dissection Hall of Anatomy Department were dissected and observed. The arterial supply of the liver, the gallbladder and its associated structures of each specimen was drawn onto a standard diagram. The arterial pattern was compared with the typical pattern found in conventional textbooks. Different types of variations were recorded in accordance to the cadavers' sexes and races. Cases 1 to 7 followed the usual arterial pattern as described by conventional textbooks, whereas the remaining 12 cases showed vast differences from the standard pattern of arterial supply of the liver and the gallbladder. Case 11 presented with the cystic artery arising from the hepatic artery proper on the right side of the biliary system and passes behind the right and left hepatic ducts. Case 12 was peculiar for there are two cystic arteries originating from the celiac trunk and the superior mesenteric artery respectively on the right side of the biliary tree before passing behind the ductal system and the portal vein. Cases 14 and 15 do not have hepatic artery proper as the common hepatic artery gives off three terminal branches i.e the right and left hepatic and the gastroduodenal arteries. The left hepatic artery was seen to arise from the common hepatic artery and the gastroduodenal artery originates from the hepatic artery in Case 16. The cystic artery in Cases 17 and 18 originates from the hepatic artery proper instead of originating from the right hepatic artery. 15 cases were found to have cystic arteries situated in the Calot's triangle. A significant conclusion cannot be made in relation to the effect of sex and race on the occurrence of any variation of live and gallbladder arterial supply as there is a limitation of size of the sample and time factor.

KEYWORDS: Hepatic arteries, cystic artery, variations, origin, relations, biliary system.

THE PRELIMINARY STUDY ON THE FUNGI SPECIES FROM THE SWALLOW DROPPINGS

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The swallow droppings was taken to the Medical Microbiology laboratory and cultured into 20 cultures on Sabouraud Dextrose Agar (SDA). We were observing the cultures once in every 2 days to ensure the growth. After making a few subcultures, we managed to isolate some species of fungi. By using the lactophenol Cotton Blue (LCB) stain, we were able to identify the different species of fungi microscopically. The fungi isolated: 1. *Aspergillus sp.*, 2. Non sporulating *Chrysosporium sp.*, 3. *Peacilomyces sp.*, 4. *Streptomyces sp.*, 5. *Candida albicans*. From this studies, we were able to show whether the swallow droppings harbour any pathogenic fungi. All the fungi that we had isolated were non pathogenic. However, some of the species isolated were opportunistic pathogen, such as *Candida albicans*, and *Aspergillus sp.* When comparing the results observed from the swallow dropping with results on pigeon, bat or starling dropping on earlier studies, the swallow droppings did not harbour any pathogenic fungi. This result may not be a significant conclusion because of the small size of the sample. A more extensive sampling may reveal a significant conclusion. This preliminary study is to find whether

the swallow droppings harbour any pathogenic fungi.

Keyword: Swallow dropping, *Aspergillus sp.*, non sporulating *Chrysosporium*, *Peacilomyces sp.*, *Streptomyces sp.*, *Candida albicans*, pathogenic fungi, non pathogenic fungi, opportunist pathogen.

CORRELATION BETWEEN QUALITY OF SPUTUM SPECIMEN AND PATHOGENS ISOLATED

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A prospective study was carried out on 100 sputum specimens obtained from patients in University of Malaya Medical Centre (UMMC) suspected by doctors of having lower respiratory tract infection to determine the association between the quality of sputum specimens and pathogens isolated. Their ages ranged from 2 years to 87 years; 46% of them were male and 54% were female. Sputum was observed by naked eye appearance and classified by its colour and viscosity. Smear specimen after gram staining was seen under 100x magnification to count epithelial cells and pus cells and under 1000x to identify any detectable specific pathogens. Pathogens were confirmed by plate culture and certain biochemical tests within 48 hours. Data were analyzed statistically by chi-square test (significant level $\alpha = 0.05$) to determine their correlation. Bacteria isolated from the sputum were detected in all cases which includes the normal flora (mostly *Neisseria sp.* and *Streptococcus sp.*). 30 pathogens of 29 specimens were detected. They included *Pseudomonas* and groups, *Enterobacteriaceae*, *Candida albicans*, *Haemophilus influenzae* and *Staphylococcus aureus*. There were no statistically significant correlation between quality of sputum specimen and pathogens isolated although this may not be entirely correct for all types of pathogens. There is some degree of relation between quality of sputum specimen which infected by *Pseudo.* groups, *H. influenzae* and *Enterobacteriaceae*, and its pathogens.

KEYWORDS : Quality, Sputum, Pathogens.

RACIAL DIFFERENCES IN HAEMODYNAMIC RESPONSES TO STRESS IN MALAYSIANS

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In United States, the prevalence of essential hypertension is considerably higher and the severity of its cardiovascular complications greater in blacks than whites. Various genetic and environmental factors have been postulated to explain these racial differences in the clinical presentation of hypertension. Previous studies have shown that blood pressure responses to many short-term laboratory stressors are greater in blacks than in whites. Thus, it has been suggested that a greater increase in vascular tone in response to stress in blacks, occurring either because of increased sympathetic activity or because of altered vascular sensitivity to sympathetic stimulation, may result in increased peripheral vascular resistance and, coupled with higher levels of environment stress, results in sustained hypertension.

In Malaysia, we do not know whether there are any significant differences in haemodynamic response to stress among the three major ethnic groups of Malays, Chinese and Indians. So the purpose of the present study was to examine for racial differences in haemodynamic responses to stress in our own population.

Fifty Malays (age 19.6 ± 0.9 years), fifty Chinese (age 20.7 ± 1.1 years) and twenty Indians (age 20.6 ± 0.9 years) who were students of University of Malaya with no evidence of present or past history of hypertension, heart disease and diabetes mellitus were selected for this study. Three types of stressors were performed on each subject, 1) mental arithmetic test, 2) cold stimulus and 3) exercise. In this study, heart rate (HR), systolic and diastolic blood pressures (SBP and DBP) were measured to determine the

changes in haemodynamic responses.

We have found the racial differences in haemodynamic response to stress in Malaysians. The Malays demonstrated a significant higher resting blood pressure among the three ethnic groups. Blood pressure of Malays in response to all the three types of stressors was also significantly higher than the Chinese and Indians. This is the first study done in Malaysia, which demonstrated such important findings in our own population. These findings may have important contribution to the study of pathophysiology of hypertension among Malaysians. Follow-up studies are needed to determine the mechanisms underlying such differences.

KEYWORDS: Racial difference, haemodynamic response, stress, Malaysians

INCIDENCE AND TYPES OF POST- OPERATIVE SEPSIS

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Post-operative sepsis should have become a relatively uncommon complication largely because of greater awareness of the causative factors and feasibility of avoiding many of them. Nevertheless, post-operative sepsis is a medical emergency. If left unattended, it could lead to more ominous sequelae, culminating in septicaemic shock, multiple organ dysfunction syndrome, and death. The study that was conducted on the 21st of May to 16th of June 2001 has several aims to be achieved. The first objective of this study is to observe the types of infections and the frequency of some of the commonest type of sepsis occurs post-operatively in University of Malaya Medical Center (UMMC). It is our aim to determine some of the risk factors that will or may affect the process of healing. It is our hope that this study may interest some medical researchers to do this study on a larger scale so that they could formulate steps to reduce post-operative septicaemia cases. The research was done in surgical wards, (7U and 6U) of University of Malaya Medical Center, in a prospective manner. All patients who had undergone either elective or emergency operation and admitted to the respective wards, were followed up for septicaemia. Eleven (5.97%) patients out of 184 operated patients develop septicaemia. The septicaemic rate from 'clean' surgical wound was 4.3%, rising to 4.9% and 10.63% for 'clean-contaminated' and 'dirty and infected' surgical wounds respectively. As a whole, 46% septicaemia cases arise from 'dirty and infected' procedure, 36% from 'clean-contaminated' procedure, while 18% arise from 'clean' procedure. Bacteriological studies reveal that the commonest bacterial isolates were Methicillin-resistant *Staphylococcus aureus* (33%), *Pseudomonas aeruginosa* (17%), *Klebsiella species* (17%), *Enterobacter species* (17%), *Escherichia coli* (8%), and Methicillin-resistant *Staphylococcus epidermidis* (8%). 36.36% of septicaemic patient came from 60- 80 years of age group, the same percentage is shared by 20-40 years of age group, 18.18% came from 40- 60 years of age group, while only 9.09% came from 0- 20 years of age group. The septicaemic rate of clean surgical wound is used to compare surgical standard of hygiene between hospitals. Based on our study, we have concluded that the septicaemic rate of clean surgical wound in UMMC (4.3%) is low and well within the acceptable standards.

KEYWORDS: Incidence and Types, Post-operative Sepsis.

UTILIZATION OF COMPLEMENTARY AND ALTERNATIVE MEDICINE (CAM) AMONG CANCER PATIENTS WHO ARE UNDERGOING RADIOTHERAPY IN UMMC

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An observational study was carried out in Radiotherapy Clinic in Clinical Oncology Unit, UMMC to assess the utilization of complementary and alternative medicine (CAM) among the cancer patients. The

data was collected for 9 days from 21st to 29th May 2001 by doing face-to-face interview with 58 cancer patients aged 18 and above who received radiotherapy treatment.

We obtained information from cancer patients who received radiotherapy in terms of the type of CAM that they utilized, reasons of choosing and the outcome. Besides that, we assessed the responds of the doctor who treated the patients once they have been informed about the utilization of CAM by the patients. We also tried to find out the reasons why the patients didn't inform the doctor about it.

A structured questionnaire consist of 3 components wAs used: socio-demographic data, data on utilization of CAM e.g. type, reason of using, source of information regarding CAM and the respond of attending physician once they were informed that their patient was utilizing CAM beside the current hospital treatment. As for data analysis, the statistical package (Window version 8.0 SPSS) was used to analyze the data.

From our study we found out that 72% (N=42) of the cancer patients undergoing radiotherapy are CAM users and 28% (N=16) are non-CAM users. Over half of the CAM users (76.2%, N=32) had utilized at least one CAM and 50.0% (N=21) had utilized three or more. The most popular CAM used by the patients is herb (67.0%, N=28), followed by diet (64%, N=27), spiritual practice (48%, N=20) and vitamin (41%, N=17). 83% (N=35) of the patients utilized CAM to aid in healing and 68% (N=29) for psychological benefits. Other reasons are to reduce complication (60%, N=25), recommended by friends (47%, N=20), and low cost (31%, N=13). We also found out that 45% (N=19) of the patients informed the doctor about the utilization of CAM. 95% (N= 18) of the doctors encouraged the patients to continue CAM.

Alternative therapies will gain more acceptances by medical professionals if research on the evidence of their effectiveness moves beyond belief and have scientific basis. Indeed, once the evidence is in place, such therapies will no longer be considered alternative, but will become an integral feature of accepted medicine.

KEYWORDS: Complementary and alternative medicine, alternative medicine, cancer treatment.

NUTRITIONAL STATUS AMONG GERIATRIC PATIENTS IN MEDICAL WARDS AT UNIVERSITY MALAYA MEDICAL CENTRE

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This study was conducted from 21st May to 6th June 2001 at the Medical Wards of University Malaya Medical Centre with the aim of assessing the nutritional status of geriatric patients and to determine the relationship between nutritional status and disease, mainly. Also, we were interested whether there exist any correlation between the nutritional status and the social class of a patient. Our intention to investigate the relationship between nutritional status and known duration of illness was not met because of patient's difficulty in recalling the inception of the disease. We also widened our survey scope by including medical wards other than Geriatric Ward, although initially we stated that we were only going to use the Geriatric Ward in our proposal. After the literature search and the Subjective Global Assessment form was completed, SGA was performed on geriatric patients. Once the target of 100 patients was met, data analysis and statistical test was performed to come up with significant conclusions.

We discovered that more than 2/3rd (65%) of geriatric patients were under nourished. Possible reasons were that the elderly are more prone to disease, low appetite drive and have poorer efficacy in absorption of nutrients. Also, the disease of a patient is the major determinant of SGA rating. This was anticipated on the basis that the disease alters many aspects in the body, which determines the nutritional status. Another discovery was that geriatric patients tend to be from lower social class (based on income), which was also expected since better income would imply better dietary intake. However, race in Malaysia does not influence SGA rating. Although there are various cultures, our main intake is similar and our eating patterns share considerable resemblance. The well nourished and under nourished do not show any significant pattern among the males but female geriatric patients are more likely to be under

nourished. Otherwise, sex is not a factor influencing SGA rating.

The high rate of malnourishment among geriatric patients is a major concern and signifies that the government and the hospital management have to step up efforts to raise up the nutritional status.

KEYWORDS : Subjective Global Assessment , geriatric , nutritional status.

THE OCCURRENCE OF PROZONE PHENOMENON IN THE SCREENING OF SYPHILIS WITH THE RAPID PLASMA REAGIN (RPR) TEST

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Syphilis is a chronic systemic infection caused by *Treponema pallidum* subspecies pallidum. It is clinically important because of its fatal complications during late stages of the disease. Serological screening with either cardiolipin or treponemal antigen test is crucial for the detection and control of syphilis. However, the occurrence of prozone phenomenon (a very high antibody titer preventing the flocculation reaction between antibody and antigen) can mask the serologic evidence of syphilis and cause misdiagnosis. To determine the prevalence of prozone phenomenon in the screening of syphilis with the RPR card test, a total of 259 serum samples from 191 HIV-positive patients and 68 HIV-negative patients that were negative with qualitative RPR screening test were collected from Jan 2000 to 28 May 2001. Two-fold serial dilutions until 1:1024 were made using the Macro-Vue™ RPR test kit (Becton-Dickinson, USA). All RPR non-reactive sera remained non-reactive following dilution. Hence, we failed to detect any prozone phenomenon in the sera tested. This suggests that the prevalence of prozone phenomenon is less than 0.39% among patients from University Malaya Medical Center (UMMC) who gave consent for their sera to be tested for HIV-antibody. Further review of the association between RPR and HIV test results was then carried out. The results of both RPR and HIV tests for a total of 667 patients from July 1996 to 28 May 2001 were gathered. The data showed that there is no statistically significant difference in the geometric mean titers between HIV-positive and HIV-negative patients. The proportion of RPR-positive test results among HIV-positive and HIV-negative patients also showed no significant difference. In conclusion, it appears that the occurrence of prozone phenomenon is rare and the RPR card test without serum dilution may be sufficient for the screening of syphilis. In addition, there is no significant difference in the RPR positivity and titers between HIV-positive and HIV-negative patients.

KEYWORDS : Prozone phenomenon, Rapid Plasma Reagin (RPR), syphilis screening, HIV.

RESIDUAL DETERMINATION OF ENDOSULFAN AND ITS METABOLITES IN PLASMA AND ITS EFFECTS ON LIVER, KIDNEY AND BODY WEIGHT IN RATS

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Endosulfan, an organochlorine insecticide of the cyclodiene group, is used widely in Malaysia to control a wide range of insects and mites on a broad spectrum of crops like tea, fruits and vegetables and on grains. The commercial product of this pesticide is made up of a mixture of two separate parts (stereoisomers): the alpha and beta configurations, with the ratio of 70:30.

In this study, we aimed to determine the residual level of endosulfan (a suspected endocrine disrupting chemical, EDC) and its metabolites in plasma, the body weight as well as the liver and kidneys weight after repeated oral administration to the rats. 14 Male Sprague-Dawley (SD) rats weighing 65-120g (4-

week old) in each group were fed technical grade (2:1) endosulfan (5 and 10mg/kg) daily for 15 days via oral gavage. Their body weights were determined initially and on the 16th and 30th days of treatment. Half of the rats were sacrificed by decapitation on day 16 and the remaining on day 30, i.e. 15 days after the last treatment. The liver and kidneys were removed and weighed. Plasma was collected for residual analysis.

In our findings, residues of endosulfan were not detected in plasma samples. It was because its half-life was 8 hours and sampling was done 24 hours after the last treatment. The body weights of the rats on day 30 were increased. This is perhaps attributed to the decrease of triiodothyronine hormone and work on this hypothesis is in progress. The liver was enlarged because more enzymes were needed to cope with the effects of endosulfan. During the treatment, five rats died; one on the sixth and four on the seventh day. This was perhaps due to the toxic effects of endosulfan.

From the findings, we conclude that the residues of endosulfan were not detected in the plasma of the rats because they were cleared rapidly from blood; and endosulfan had some effects on the body weight gain and liver weight in both groups (5 and 10mg/kg).

KEYWORDS: Endosulfan, insecticide, pesticide, GC-MS

MEASUREMENT OF ALPHA-FETOPROTEIN IN PATIENTS' SERUM USING LOCALLY DEVELOPED IMMUNOASSAY

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Aim: The level of alpha-fetoprotein (AFP) is of considerable clinical significance mainly in patients having malignant disease such as hepatocellular carcinoma. The aim of this study is to develop a standard test system for measurement of AFP and using this locally developed immunoassay to determine the level of AFP in patients' serum.

Methods: IRMA for AFP using polystyrene beads as solid phase. A potentially purified polyclonal antibody (IgG fraction) was used as the 1^o antibody. The 125 I-radiolabelled monoclonal antibody was used as the 2^o antibody. During this project, the assay was potentially characterized. Some of the experiments done included:-

- i) Radiolabelling of 2^o monoclonal antibody by Choramine T with 125 I
- ii) Getting up standard curves using AFP standard supplied by Radioisotope Indonesia Laboratory and SAPU (Scottish Antibody Production Unit)
- iii) Testing the effect of plasma, relaxin and oxytocin on the AFP standard curves
- iv) Preliminary assessment of patient sera and comparison to the results obtained by Clinical Diagnostic Laboratory (CDL)

Results : Standard curves of AFP showed an increased of binding AFP with labelled anti-AFP when the concentrations of AFP level were increased. There was no changes to the standard of AFP when the other protein (Oxytocin and relaxin) and human plasma were added to the AFP. So, this protein, does not compete with the binding of the AFP with labelled anti-AFP. From four patients' samples tested, two of them showed positive results when compared with the standard.

Conclusions : Good standard curves were obtained and results of our serum compared parallelly with results obtained by CDL. The results indicate that this assay shows good potential to be developed into a kit for the measurement of AFP.

KEYWORDS : IRMA, AFP, polyclonal antibody, monoclonal antibody.

SYNEDRELLA NODIFLORA AND THERAPEUTIC USE IN URINARY INCONTINENCE : ANY PHARMACOLOGICAL BASIS?

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Synedrella Nodiflora, belonging to the family Compositae, was reportedly found to be therapeutically efficacious in urinary incontinence among a number of elderly individuals when eaten boiled. The aim of this study was therefore to investigate whether there is any pharmacological basis for the therapeutic use of this plant for this ailment. Both aqueous and methanol extracts of the plant were prepared and used to observe any change to the response of the guinea pig ileum to acetylcholine. This was done by comparing the standard log dose response curve (LDRC) of acetylcholine (in the absence of any abstract) to the LDRCs of acetylcholine in the presence of each extract. The concentrations of acetylcholine used ranged from 0.1ng/ml to 1000ng/ml; those of aqueous extract were 1 mg/ml and 2mg/ml, and those of methanol extract were 1mg/ml, 2 mg/ml and 5 mg/ml. It was found that the LDRCs of acetylcholine in the presence of 2mg/ml, and 5mg/ml methanol extract, and 1mg/ml and 2mg/ml aqueous extract were shifted to the right of the respective standard log dose response curves of acetylcholine, i.e. the linear portions of these curves were parallel to those of the standard LDRCs for acetylcholine; while the maximal responses of the guinea pig ileum were achieved but at larger doses of acetylcholine. Since a greater amount of acetylcholine was needed to produce the same amount of contraction in the presence of the extract, this indicated that the extracts were acting as competitive reversible antagonists to the muscarinic receptors, and that they had antimuscarinic activity. However 1mg/ml methanol extract enhanced the action of acetylcholine. This was probably due to some component or components which have stimulant actions on the ileum. Hence the LDRCs of both methanol and aqueous extracts were also obtained by observing the contractions of the guinea pig ileum to various concentrations of the extracts. These stimulant actions were found to be masked at higher concentrations of the extract as the components with antimuscarinic effects were stronger and thus overshadowed the stimulant action. The stimulant action of the extract was however found to be not muscarinic or histaminergic in nature since it was not blocked by atropine (antimuscarinic) and chlorpheniramine (antihistamine) respectively. The stimulant actions was also calcium dependent since it did not occur in a calcium free tyrode solution. When the guinea pig ileum was in a state of continuous high (vagal) tone obtained after repeatedly stimulating with acetylcholine followed by washing the ileum, both methanol and aqueous extracts were found to cause relaxation of the ileum. This condition mimics the persistent excessive vagal stimulation of the detrusor smooth muscles of the bladder in individuals with urinary incontinence due to increased micturition reflex. The use of this plant to alleviate the symptoms of urinary incontinence in these individual therefore does have a pharmacological basis.

KEYWORDS : *Synedrella Nodiflora*, urinary incontinence, antimuscarinic; guinea pig ileum, extract

IMMUNOHISTOCHEMISTRY FOR THE DIAGNOSIS OF HERPES SIMPLEX VIRUS INFECTION

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The immunohistochemistry by using indirect immunoperoxidase method was applied to the diagnosis of herpes simplex 1 virus infection. Specimens were obtained from skin and oesophageal tissue biopsies from 1994 to 2001 and were categorized into 2 groups; first group with 12 specimens consisted of confirmed and highly suggestive herpes simplex 1 infection and the second group with 18 specimens was suspected speci-

mens with herpes simplex infection. The three-step indirect immunoperoxidase method by using avidin-biotin-enzyme complex was performed. The immunoperoxidase method identified herpes simplex virus -infected cells in 9 specimens of the total of 30 specimens, in which 8 specimens were from group 1 and 1 specimens were from group 2. From the comparison of the microscopic review between H&E staining and immunoperoxidase staining, the latter appears to be more sensitive in detecting the antigen. Therefore, immunoperoxidase method can be recommended as a rapid and reliable techniques for the diagnosis of herpes simplex infection in tissue biopsies.

KEYWORDS: Immunohistochemistry, HSV infection, tissue biopsies.

NUTRITIONAL STATUS OF PAEDIATRIC ONCOLOGY ADMISSIONS IN UMMC

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Background: Good nutrition is critical for children with cancer because cancer and its treatment can adversely affect nutritional status. Malnutrition in children with cancer can be due to poor dietary intake, increased metabolic rate as well as the release of cytokines. Nutrition is known to play an important role in the development and function of the immune system. Thus, malnutrition can lead to impaired immunocompetence.

Objectives: The main objective of this study is to ascertain if there is any change in the nutritional status of paediatric oncology patients with every admission. The additional objectives are to determine if the ward is providing adequate calories for the paediatric oncology admissions and to assess the practice of supplementing conventional/ prescribed medication with alternative/ other forms of medication.

Methodology: 46 paediatric oncology admissions from Paediatric Ward 6 in University Malaya Medical Center (UMMC) were included in the study which was conducted over a 3-week period. A personal interview with the patients' parents was carried out aided by a prepared questionnaire. Anthropometric measurements of the patients, which are weight, mid-arm circumference (MAC), head circumference (HC) and height were taken and tabulated. These measurements were taken on the day of admission and on the day of discharge. The caloric intake of the subjects was calculated by estimation of the weight of the food they consumed.

Results: Out of the 46 subjects who took part in the study, 50% lost weight while in the ward whereas 41.3% gained weight and in 8.7%, the weight was unchanged. Nineteen, that is 41.3% lost MAC during their stay. However, none of these changes reached statistical significance. The daily hospital diet provides approximately 2115.1 kcal. The mean caloric intake of the patients was 865.9 kcal (SD= 483.5).

Among the 46 subjects interviewed 60.7% consumed hospital food and 52.2% took alternative medicine/ other forms of medication such as vitamins and herbal remedies in addition to the conventional / prescribed medication.

Conclusions: Serial-weight-measurement is more sensitive a tool to monitor nutritional status compared to the MAC. It is evident that paediatric oncology admissions lose weight while in the ward despite adequate caloric supply from the ward food. This is largely due to poor food intake by the patients secondary to anorexia, mucositis and emesis. Medical personnel managing these patients should be aware of the marked discrepancy between amount of calories supplied with actual caloric intake. Supplementation i.e. nasogastric feeding may be necessary in a large number of patients. This study also shows that a large proportion of the subjects consume the food provided by the hospital and take alternative medicine/ other forms of medication.

KEYWORDS: Nutrition; nutritional status; malnutrition; paediatric oncology; anthropometric measurements; caloric intake.

ANTIBIOTIC SUSCEPTIBILITY PATTERN OF RESPIRATORY TRACT PATHOGENS

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A total of 128 isolates of respiratory tract pathogens were collected from Universiti Malaya Medical Centre Kuala Lumpur (UMMC) from patients with upper and lower respiratory tract infections between May 21st and June 15th 2001. Six most common pathogens of the respiratory tract were studied and they were *Staphylococcus aureus*, *Pseudomonas aeruginosa*, *Klebsiella pneumoniae*, *Acinetobacter spp.*, *Haemophilus influenzae* and *Streptococcus pneumoniae*. Antibiotic susceptibility tests were then conducted beginning with their respective 1st line antibiotics. During our study, we were able to study a total of 30 isolates of *Staphylococcus aureus*. 43.3% isolates were identified as MRSA with another 56.7% identified as MSSA. MRSA isolates were highly resistant to cefuroxime, erythromycin, penicillin and trimethoprim/sulfamethoxazole with 100% resistance rate each. MRSA isolates were highly susceptible to vancomycin (100%), fusidic acid and rifampin (both recorded 92.3%). MSSA isolates have recorded 100% sensitivity rate to cefuroxime, vancomycin, trimethoprim/sulfamethoxazole, fusidic acid and rifampin. More than 90% isolates of *Staphylococcus aureus* obtained were resistant to penicillin. As for *Pseudomonas aeruginosa*, 8% isolates were resistant to gentamicin, 12% to piperacillin, 4% to ciprofloxacin, 20% to ceftazidime, 16% to imipenem and 12% to cefoperazone. Isolates of *Haemophilus influenzae* showed 31% resistance to ampicillin, 3.4% to chloramphenicol, 13.8% to both ceftriaxone and cefuroxime, 69% to trimethoprim/sulfamethoxazole and 17.2% to amoxicillin/clavulanic acid. *Acinetobacter spp.* isolates have recorded 58.8% resistance to trimethoprim/sulfamethoxazole, 94.1% to ampicillin, 17.6% to ampicillin/sulbactam, 52.9% to gentamicin, 64.7% to cefoperazone and 70.6% to cefuroxime. And finally, *Klebsiella pneumoniae* isolates that recorded 18.5% resistance to sulbactam and gentamicin, 25.9% to cefuroxime, 11.1% to trimethoprim/sulfamethoxazole, 100% to ampicillin and 14.8% to cefoperazone. Besides that, we also conducted a retrospective study on *Streptococcus pneumoniae*. A total of 21 cases of *Streptococcus pneumoniae* infections were reported from April 2000 to February 2001. The result is: 14.3% resistant to penicillin, 42.9% resistant to erythromycin and 100% sensitivity to cefuroxime.

KEYWORDS: Universiti Malaya Medical Centre (UMMC), *Staphylococcus aureus*, *Streptococcus epidermidis*, *Pseudomonas aeruginosa*, *Klebsiella pneumoniae* and *Haemophilus influenzae*.

ENTERIC CARRIAGE OF EXTENDED SPECTRUM β -LACTAMASES (ESBL) PRODUCING GRAM-NEGATIVE COLIFORM AND VANCOMYCIN-RESISTANT ENTEROCOCCI (VRE) BACTERIA IN A GERIATRIC POPULATION AND AMONG HAEMATOLOGY/ONCOLOGY PATIENTS

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ESBL-producing Gram-negative bacilli (*Escherichia coli* and *Klebsiella pneumoniae*) and VRE are emerging pathogens and this is an alarming situation. Prevalence and risk factors for development of ESBL-producing Gram-negative bacilli (GNB) and VRE were studied from stool samples/rectal swabs collected from nursing homes, in-patients of geriatric ward and haematology/oncology ward of Univer-

sity Malaya Medical Centre (UMMC). Ceftazidime antibiotic-containing media was used to detect enteric carriage of resistant bacteria. Identification by biochemical tests was carried out on the ceftazidime-resistant isolates. Of the 85 isolates, 19 ESBL-producing GNB were detected while no VRE was detected. 73.3% of the ceftazidime-resistant *E.coli* were ESBL-producer while all the ceftazidime-resistant *Klebsiella pneumoniae* were ESBL-producer. 84% of the patients that harboured ESBL-producing GNB were on prior antibiotic treatment while only 10.5% of them had used urinary catheter. All the ceftazidime-resistant GNB were also resistant to other third generation cephalosporins with a large number of it being resistant to monobactams (96.8%). However, most of them were sensitive to imipenem and gentamicin. We concluded that prior antibiotic exposure may predispose to carriage of ESBL-producing GNB and third generation cephalosporins should not be used in patients with possible severe GNB infection and had recent exposure to broad-spectrum antibiotics.

KEYWORDS : extended-spectrum β -lactamase (ESBL), vancomycin-resistant enterococci, *Escherichia coli*, *Klebsiella pneumoniae*.

PREVALENCE OF MICROFILARIAE IN DOMESTIC CATS IN KAMPUNG AWAL AND KAMPUNG KERINCHI

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A total of 110 blood samples were collected from the domestic cats from Kampung Awal and Kampung Kerinchi areas. 26 samples were collected from Kampung Awal and 84 samples were collected from Kampung Kerinchi between 22/5/01 to 5/6/01. Blood was taken from the pinna of each cat by blood lancet. The blood samples were collected between 8.30 am to 10.30 am. About 60 μ m³ thick blood film was made from each cat. The films were dried for 24 hours and later stained by using Giemsa stain (Innenkorper technique). The blood films were examined microscopically by using 10x objective. The positive slides were confirmed by using 40x objective. Seven cats (6.4%) were found to be positive for *Brugia pahangi* microfilariae. Six cats (7.1%) were from Kampung Kerinchi and one (3.8%) was from Kampung Awal. No other filarial parasites were seen. Since several positive *Brugia pahangi* microfilariae in cats were seen in Kampung Kerinchi, it shows that transmission of *Brugia pahangi* occurs among the cats there.

KEYWORDS : domestic cats, blood films, Giemsa stain, microfilariae, *Brugia pahangi*.

A STUDY OF PREVALENCE OF LOWER URINARY TRACT SYMPTOMS IN OLDER MEN IN UHKL OUTPATIENT CLINICS

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Introduction and review : The aim of the present paper is to determine the prevalence, bother attributable to, and predictors to self-reported GP (general practitioners) attendance of uncomplicated lower urinary tract symptoms (LUTS) in men aged 40-80 years old in Kuala Lumpur, Malaysia

Methods : A total of 198 randomly selected men aged 40-80 years old (78% response rate) participated in a hospital based study. The main outcome measures were self-reported International Prostate Symptom Score (IPSS)

Results : LUTS are common: The result showed most the respondents never or hardly ever experienced these symptoms. However, many reported having urinary symptoms more than hardly ever (less than half the time, half the time, more than half the time and almost always): 31.8% did not feel that the bladder emptied fully after urinating, 33.8% often had to urinate again within 2 hours, 19.2% stopped and started when they are urinating, 28.3% found it difficult to postpone urinating, 25.2% had a poor flow, 12.2% had

to push or strain to begin urination, and 34.3% had to get up more than once per night to urinate. The proportion of men with no or mild symptoms decreased with age, while proportion with moderate or severe symptoms increased. Of men with moderate or severe symptoms, 28.6% reported that the symptoms were a medium or great problem and 15.1% reported that the symptoms interfered with daily activities at least sometimes. Only 50(25.3 percent) of total 188 men having at least one urinary symptom reported visiting a GP about their urinary symptoms in the previous five years. The only independent predictor of GP attendance is degree of bother from urinary symptoms. The other factors such as increasing age, marital status, education, and socioeconomic status based on monthly income and prostate cancer did not predict GP attendance.

Discussion/Conclusion : More than 90% of men in our study have at least one urinary symptom. Prevalence of moderate and severe LUTS in Malaysian men was greater than other studies probably because of the difference in terms of study design, age groups evaluated, definition of urinary symptoms and exclusion criteria. Levels of bothersomeness differ among countries because of different study design and cultural variation. GP attendance is predicted by degree of bother.

KEYWORDS : Urinary tract, lower urinary tract symptoms, prostatic hypertrophy (BPH), prevalence.

RELATIONSHIP BETWEEN IRON DEFICIENCY ANEMIA AND FREQUENCY OF BLOOD DONATION

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The objective of this study was to investigate the impact of frequency of blood donation on the body iron store as assessed by the serum ferritin level, hence, indirectly able to predict impending iron depletion.

Serum ferritin concentration provides the single best and least invasive way to measure the size of body's iron store. A measure of serum ferritin levels can detect the first stage of iron deficiency, since ferritin is the storage form of iron that is depleted in the first stage. Monitoring the iron status is of major importance in the early detection and prevention of iron deficiency anemia but is not practical for routinely screening blood donors prior to blood donation.

In our study, 100 blood samples from both the first time donors (never donate blood before or did not donate blood for the previous year) and regular donors (≥ 2 donations for the previous year) were measured by using Automated Chemiluminescent System (180SE) Instrument.

Result : There were 99 Chinese, 65 Malay, 32 Indian and 4 other races donors who participated in our study. 139 were male donors and 61 were female donors. The mean serum ferritin levels are 17.9380 and 18.4740 for the first time and the regular donors respectively. The serum ferritin levels ranged from 5.70mmol/L to 45.90mmol/L and from 3.10mmol/L and 39.10mmol/L for the first time and regular donors respectively. From the t-test, there were no significant differences in the serum ferritin levels between the first time donors and the regular donors. From the sub analysis, there were no significant differences in the serum ferritin levels between the first time male donors and the regular male donors, the first time female donors and the regular female donors, the first time Chinese donors and the regular Chinese donors. However, there were significant differences in the serum ferritin levels between the first time Malay donors and the regular Malay donors. The Chi-square test showed that there was no association between serum ferritin and the Red Cell Distribution Width (RDW).

Discussion : The results suggested that regular blood donations did not lead to iron deficiency anemia. It indicated that the hemopoietic system was capable of meeting the extra demands necessitated by the regular donation of blood. The results for the Malay donors may be due to inadequate dietary supplement of iron as a result of the dietary habit of the Malays who consume less iron rich food, prolapsed iron absorption or some peculiarities in the ability in the compensatory mechanism of the Malay donors in response to blood loss.

Conclusion : Regular blood donation does not lead to iron deficiency anemia. Iron supplement should be provided to all blood donors.

PRELIMINARY STEPS TOWARDS THE PREPARATION OF AN ELECTRONIC ATLAS OF CYTOPATHOLOGY

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64 cytological cases were selected for the preparation of the E-atlas on the basis of being common conditions with optimum cytological features by the supervisor. Of these 42 were FNAC cases, 12 non-gynaecological cases and 9 gynaecological cases. The FNAC cases were taken from lesions in the breast, thyroid, lymph nodes and salivary glands. Gynaecological cases mainly consisted of pap smears, vault smears and vulval smears. Non-gynaecological cases were bronchial brushings and washings and fluids from peritoneal, pleural and pericardial cavities as well as from cysts.

A patient database comprising relevant patient profile was compiled. Copies of cytological reports of these cases were collected. In some cases histopathological examination was performed and copies of these reports were collected. The cytological and relevant histopathological slides were retrieved from the slide archives. Slides and reports were categorised according to specimen type.

Selected views (low and high power) of smears and biopsies were photographed using a digital camera (*Nikon Fujix Digital Camera, Model HC-300Zi*) and a dual vision binocular microscope (*NIKON ECLIPSE E400*). All images were captured with *Photograb-300Z ver. 2.0* and stored in joint photography expert group (jpeg) format. The images were edited and compiled together with its respective case scenario extracted from cytology and histology reports using Adobe Pagemaker ver. 6.5 and Adobe Photoshop ver 5.0. The completed plates were converted by using Adobe Acrobat ver. 4.0 into portable document format (*pdf*) enabling the E-Atlas to be accessible via CDROM and LAN server to users i.e. undergraduate and postgraduate trainees, medical laboratory technologist trainees.

KEYWORDS : Cytology, electronic atlas, data storage.

RETROSPECTIVE PREVALENCE OF SNAKE BITES IN KANGAR DISTRICT HOSPITAL, PERLIS FOR THE PAST 2 YEARS

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Perlis is mainly an agricultural state although fishing is also an important occupation. Both farming and fishing are known occupational hazards associated with an increased risk of snake bite in adults. The aim of this retrospective study was to investigate the epidemiological features such as the prevalence and the type of snake bite and the clinical pattern of treatment seen at the Kangar District Hospital, Perlis over a two-year period. The records of 284 snake bite cases were reviewed. Malays constituted 60.2%, Chinese 16.9%, Indians 13% and others 9.8%. Higher incidence was found in males (60.2%) and more cases were seen in the extremes for those aged below 19 years old (39.7%) and above fifty years old (23.2%). Bites were predominant especially in the second half of the 24 hour. The snake were positively identified in 68 cases, of which 50 were cobras (17.6%), 16 were vipers (5.5%) and 2 sea-snakes (0.7%).

KEYWORDS : Snake bites; epidemiology; cobra; viper.

THE SCREENING OF INFECTIOUS DISEASES IN THE BLOOD BANK OF UNIVERSITY HOSPITAL, KUALA LUMPUR

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Background : One of transfusion medicine main focus is on the safety of the blood supply from the threat of infectious diseases transmission, from donors to recipients. The objectives of this study were to identify the markers and the diseases screened among the blood donors in Malaysia, especially in University Hospital Kuala Lumpur, and to ascertain the percentage of positive, negative, and false positive results from the screening. Before that, this study will list out the schematic methods of blood collection from the donor and the screening of infectious diseases.

Study Design and Methods : Blood sample from each donation was screened for 4 infectious diseases reactivity; they were Hepatitis B, Hepatitis C, HIV, and Syphilis. The screening was based on Microparticle Enzyme Immunoassay (MEIA) technology to detect the markers; HbsAg (Hepatitis B), Anti-HCV (Hepatitis C), and Anti-HIV (HIV). The processes were done by AxSYM machine system. Syphilis was screened manually through a non-treponemal test called Rapid Plasma Reagin (RPR). For the statistical analysis, the screening results for 46242 unit of samples from previous blood donations from 1998 through 2001 was used.

Results : Most of the blood samples screened were negative of any markers, as high as 100% (Anti-HIV in 1998). The highest positive result was in 1998 for HBsAg marker (1.3%). Meanwhile, the false positive results remained at very low percentage, between 0% to 1.0%.

Conclusions : The screening continued to be significant since there is persistence of positive results. The incidence of false positive is not very worrying since it was very low, and the confirmatory tests were just for the sake of the donor. Blood packs, which were initially positive, even though proved false positive afterward, will not be used for any transfusion.

KEYWORDS : Transfusion, screening, infectious diseases.

PHASE III MEDICAL STUDENTS' FEEDBACK ON THE EFFECTIVENESS OF PHASE II ELECTIVE PROGRAMME

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Objectives : This study is to find out various types of research conducted by students and their feedback on the management of the Phase II Elective Programme. Through this study, we gave an opportunity to the students to give their opinions and suggestions on this programme. After that, we can analyze their response and comment and evaluate the effectiveness of this programme. Besides, we hope to suggest possible improvements that can be made to make the elective programme an interesting learning process.

Materials and Methods : A questionnaire was produced, consisting of the important aspects that needed to be asked in order to assess the effectiveness of the phase II elective programme. The questionnaires were distributed to the phase III medical students at Tunku Ampuan Rahimah Hospital in Klang. The distribution and collection of the questionnaires took three weeks, and we managed to get 94 subjects. On the fourth week, we began to analyze the data by using Microsoft Excel and had discussions to conclude the results.

Result and Discussion : Our subjects consist of 43 male and 51 female from 190 phase III medical students. Most of them had done their research that was proposed by lecturer. About 75.5% of subjects are satisfied with the elective programme but some of them disagreed with several aspects of its management such as the time allocated, facilities provided, cost, etc. Some of them gave suggestions on how to improve this programme.

Conclusion : Based on the results we got, we found that most of the subjects involved agreed with the elective programme. However there are several of them who really put an effort to give supportive opinions that will be useful for upgrading this programme.

DETERMINATION OF THE LEVEL OF ALKYLPHENOLS AND BISPHENOL A IN HUMAN CORD BLOOD AMONG THE MALAYSIAN POPULATION

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Background : Bisphenol A (BPA), a raw material for production of polycarbonate plastics and monomers from unreacted materials and/or degraded polymers are contained in plastics. BPA may also be used as additives to some plastics. Alkylphenol, including 4-nonylphenol (NP) and 4-tert-octylphenol (OP) are breakdown products of industrial alkylphenol ethoxylates detergents and pesticides additives. They are also found in paint, textiles, metal finishing, certain plastic and lubricating oil. These abovementioned chemicals can be easily leached from food containers and tableware made of such plastics and can be taken by human through eating and drinking. Recently, estrogenic activities of BPA and other alkylphenols (NP and OP) have been revealed. Since BPA and alkylphenols are exposed to human chronically (i.e. continuously) through the usage of various plastics, they may be present in human body in some degree, even if they are easily metabolized. In addition, some parts of the remaining BPA and alkylphenols may be carried from maternal blood to fetus through umbilical cords. To examine this possibility, BPA and alkylphenols in human umbilical cords were analyzed in this study.

Materials and Methods : We analyzed 80 samples of cord blood, obtained from University of Malaya Medical Centre (UMMC). Human umbilical cords were collected upon delivery at the hospitals, squeezed into 2 clean glass containers, labeled and stored in the refrigerator. The samples are transferred to the laboratory and kept at -14°C until further analysis. The samples of cord blood are centrifuged at 3000 rpm for 10 minutes and the serum collected. 1 ml of serum is loaded into Solid Phase Extraction (SPE) column. During the process of extraction, methanol, phosphate buffer (pH 2), dichloromethane and ethyl acetate (1:1) are used. The organic extracts are evaporated under N₂ steam at 40°C. BPA and alkylphenols were trimethylsilylated with bis(trimethylsilyl)trifluoroacetamide (BSTFA), followed by reconstitution in dichloromethane and ethyl acetate (ratio 1:1) and 2 internal standards phenanthrene-d₁₀ and pyrene-d₁₀. The silylated BPA and other alkylphenols were determined by Gas Chromatograph Mass Spectrometer (GC-MS) on Selected Ion Monitoring (SIM) mode.

Results and Discussion : BPA, NPs and OPs, were significantly detected in human umbilical cord blood. The concentration were in ng / ml of blood or equivalent to ppb (part per billion). This fact suggests that some part of the compounds exist in human body and also a portion of the compounds pass from maternal blood to fetus through umbilical cord. Although the levels found are below the Tolerable Daily Intakes (TDI-50_g / kg body weight), this does not mean that it is not a cause of concern for public health, given the greater incidence on prolonged exposure of humans to low concentrations released into environment.

Conclusion : There are variations in the levels of BPA, OPs and NPs found in human cord blood among the Malaysian population which warrant the study of larger numbers of umbilical cord blood samples in future studies.

KEYWORDS : Alkylphenols, Bisphenol A, endocrine-disrupting agents, cord blood, gas chromatography-mass spectrometer (GC-MS), solid phase extraction (SPE).

RETROSPECTIVE REVIEW OF INTRAUTERINE INSEMINATION IN THE REPRODUCTIVE HEALTH CLINIC, UMMC, JUNE 1999 - APRIL 2001

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The field of assisted reproduction techniques (ART) for the treatment of subfertility has experienced dramatic and rapid growth since the past two decades. The techniques of intrauterine insemination (IUI) in couples seeking treatment for subfertility has been started in the Reproductive Health Clinic in UMMC. The aim of our study is to carry out an audit regarding the procedure in the clinic, which will outline the indications, the factors affecting the outcome of treatment, a review of the sperm analysis, incidence of successful pregnancies and the failure rate. All the cases that have been treated were reviewed from the case notes and were then analysed by using the available software program. From the cases reviewed, it was concluded that out of 194 couples who underwent IUI from June 1999-April 2001, 48 (24.72%) couples resulted in pregnancies. Women within the age range of 30-34 years old achieved the highest total number of patients seeking IUI (42.78%) out of which Malay women ranked highest relative to other races. For many years to the present, IUI has become a treatment of choice for subfertility prior to consideration of more complicated assisted reproduction techniques.

KEYWORDS : Infertility, assisted reproduction, intrauterine insemination (IUI), sperm analysis.

DETERMINATION OF BONE AGE USING ILIAC APOPHYSIS FUSION

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Introduction : This research project was done to ascertain the age of fusion of the iliac apophysis among males and females of different races in Malaysia. This research is medically important, as the information obtained is crucial in selecting the proper treatment as well as to determine the prognosis of patients with scoliosis. Risser's Sign is used to grade the cases from 0-5; 5 meaning total fusion.

Methods and Materials : The only materials that were required for this research were x-ray films. We obtained KUB's IVU's and abdominal and pelvic x-rays from the Radiology Department film archive. The films were further selected according to the age group relevant to this study, namely from 2 to 20 years of age. From there, we further discarded any indecipherable x-rays and ended up with a total sample size of 148 x-rays. All of these were graded according to Risser's Sign to determine the progression of the iliac apophysis.

Results : The distribution of the different grades are as follows: 6% grade 0, 5% grade 1, 4% grade 2, 7% grade 3, 41% grade 4 and 34% grade 5. 51% of the cases were males, while 49% females. The mean age (in years) of the respective grades of the two sexes are as follows: 6.23(males) and 6.62(females) for grade 0, 10.71(males) and 9.50(females) for grade 1, 12.78(males) for grade 2 (no data for females), 14.89(males) and 14.32(females) for grade 3, 17.13(males) and 17.40(females) for grade 4, and 19.18(males) and 18.77(females) for grade 5. By age 20 both males and females show iliac apophysis fusion. The results of a student t-test have also confirmed that there is a significant difference in the mean age of iliac apophysis fusion between males and females.

Conclusion : We came to a conclusion that the fusion of the iliac apophysis occurs much earlier in females compared to that of males. By age 20 the iliac apophysis has fused for both sexes. As for the difference between the three races in Malaysia, the data obtained was inadequate to reveal any statistical conclusion and thus the findings were inconclusive.

KEYWORDS : Iliac, apophysis, fusion, bone, age.

THE MOST EFFECTIVE WAY TO PROVIDE POST-OPERATIVE PAIN THERAPY IN CAESAREAN SECTION

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Aim: The aim of this study was to determine the most effective mode of analgesia in caesarean section.

Methods : A total of 26 patients who underwent caesarean sections in University Hospital were selected. 15 of them were given parenteral opioids analgesia and the rest were administered epidural analgesia. The patient and the anaesthetist made the choice of analgesic mode. Post-operative pain was assessed using the Visual Analogue Scale. Each follow-up was carried out four hourly for 24 hours. Patients were also asked about their satisfaction with their pain management. Data was recorded in the Acute Pain Service Form.

Results : Pain relief at 0 and 12 hours with epidural was more effective than parenteral opioids. At 24 hours however, parenteral had shown better pain relief than epidural. Overall, patients' satisfaction was higher for epidural analgesia than parenteral analgesia.

Conclusions : Epidural analgesia was the most effective way of post-operative analgesia in caesarean patients.

KEYWORDS : Analgesia, post-operative; pain; caesarean; pethidine, epidural, parenteral

LEVELS OF BISPHENOL A AND NONYLPHENOL IN SWEETS

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Endocrine disrupting chemicals (EDCs) are a group of chemicals found in the environment that produces adverse effects to humans and animals by interfering with the endocrine system. Bisphenol A (BPA) is an industrial chemical that is used in the production of epoxy resins and polycarbonate plastics. Nonylphenol is an alkylphenol that can be found in plastics. Both Bisphenol A and nonylphenol are estrogen-mimics. In this study, the levels of BPA and nonylphenol in different brands of sweets were determined using the solvent dichloromethane, dried and injected into the Gas Chromatography Mass Spectrometer (GCMS). Of the 23 types of sweets, 10 (43.48%) have been found to be BPA positive and 16 types (69.57%) have been found to contain nonylphenol. The highest levels of BPA and nonylphenol are 6.88 ng/sweet and 99.25 ng/sweet respectively. Both values do not exceed the Tolerable Daily Intake value recommended by the European Commission Scientific Committee on Food. The low priced sweets have a higher percentage of BPA detection compared to the medium/high priced sweets and this difference is statistically significant. The difference of percentage of nonylphenol detection between the low priced and the medium/high priced sweets is not statistically significant.

KEYWORDS : Endocrine disrupting chemicals, bisphenol A, alkylphenol, nonylphenol, sweets, GCMS

THE LEVEL OF KNOWLEDGE, PRACTICE AND ETHICAL PERCEPTION ON ORGAN DONATION AMONG THE PUBLIC IN UMMC AND HUKM

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Introduction : Organ transplantation has become one of the life saving procedures for those who suffer from organ or tissue failure. However, this is not supported by the low rate of organ donation. Therefore, this study looks into the level of knowledge, practice and ethical perception on such matter.

Methodology : This is a cross-sectional study carried out in the UMMC and HUKM. The study population consisted of 200 subjects from both the hospitals. Face-to-face interview was carried out based on structured questionnaire. The questionnaires comprise of 3 parts; demographic distribution, assessment of level of knowledge and perception of the public towards organ donation.

Results : Majority of the subjects were Malay (63.0%), Muslim (65.5%), male (51%), age 21 – 30 years (49.0%) and reached secondary educational level. For the level of knowledge, most of them did moderately. The mean score for the study population is 6.99 ± 1.39 . The differences in knowledge score between different groups in each demographic factor are not statistically significant. Although 187 subjects (93.5%) support organ donation programmes, there are only 48 (24.0%) subjects who has or wish to donate their organ. The main reason given for not donating an organ was no interest or motivation.

Conclusion : Lack of knowledge and misconception regarding organ donation prevent most people from donating their organ.

KEYWORDS : Knowledge, practice, ethical perception, organ donation.

MALARIAL PARASITAEMIA IN MALE AND FEMALE HOST – ANIMAL MODEL

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Five male and five female white mice each were inoculated with 1×10^7 *Plasmodium berghei*-infected red blood cells intraperitoneally. Later, thin blood smears stained with Giemsa were done daily until the mice died. The evaluation of parasitaemia were done under 100X magnification and the experiment was repeated.

The female mice produced higher and faster rate of parasitaemia than the male counterpart. Both experiments did show that the female mice reached its maximum peak of about 80% (Experiment 1) and 63% (Experiment 2) parasitaemia percentage by Day 7. By Day 9, all the female mice died.

The physiological state of the host might affect the rate of infection. It is suspected that its hormones – testosterone and oestrogen, might play their roles in monitoring the infection.

KEYWORDS : Malaria, *Plasmodium berghei*.

SCREENING OF ALOE VERA FOR ANTIBACTERIAL ACTIVITY

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Abstract : An aqueous extract of *Aloe vera* (*A. vera*), a medicinal plant traditionally used in healing purposes, was subjected to preliminary antibacterial screening against several pathogenic and opportunistic bacteria. The aims of this study are to identify the strains of bacteria that can be inhibited by *A. vera* and to obtain the minimum concentration of *A. vera* that has an inhibitory effect. The method used to screen for antibacterial activity is the agar disc diffusion method. Filter paper discs impregnated with *A. vera* extract were applied onto a nutrient plate lawned with 1.5×10^8 organisms/ml of a specific bacterium. After an overnight incubation period at 37°C , the diameters of the zones of inhibition were measured. The minimum concentration of *A. vera* was determined by using serial dilutions of the extract.

Results obtained showed that out of the ten types of bacteria tested, five could be inhibited by the *A. vera* extract and they were *Salmonella sp.*, *Shigella sonnei*, *Escherichia coli*, *Streptococcus pneumoniae* and *Haemophilus influenzae*. However, *A. vera* extract exhibited no antibacterial activity against *Klebsiella pneumoniae*, *Pseudomonas aeruginosa*, *Acinetobacter sp.*, *Staphylococcus aureus* and methicillin resistant *Staphylococcus aureus* (MRSA). In this study, it was found that the most susceptible bacterium to *A. vera* was *Streptococcus pneumoniae*.

In conclusion, aqueous extract of *A. vera* is found to possess some antibacterial activity that warrants further investigation.

KEYWORDS : *Aloe vera*, antibacterial activity

PRODUCING A MULTIMEDIA DOCUMENTARY OF FINE NEEDLE ASPIRATION CYTOLOGY (FNAC) IN THE UNIVERSITY OF MALAYA MEDICAL CENTRE (UMMC)

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Fine Needle Aspiration Cytology (FNAC) is an innovative procedure involving extraction of cells by a small-gauge needle under negative pressure developed in the Karolinska Institute in Stockholm, Sweden. This procedure provides a rapid and reliable diagnosis of space occupying lesions and has high patient compliance. The aim of this elective project is to document FNAC procedures carried out in UMMC using the latest available multimedia hardware and applications for video production. In the process, the students are exposed to clinical procedures, communicating with patients and members of the health care team and the multimedia facilities available for medical education in UMMC.

The target venues or sets were in the surgical clinic, Paediatric ward, Endoscopy Unit and Mammography Unit. The shooting of the video using a JVC Digital Video Camera GR-DVL 910A took two weeks, followed by two weeks of digital video editing using a Sony Digital Video Cassette Recorder and a multimedia PC (Window 2000, Pentium III, 20 GB hard disk, 80GB Maxtor external hard disk, 128 MB RAM) in the Clinical Skills Laboratory. Digital video editing was done using MGI VIDEOWAVE III. Video editing involved selection of appropriate video clips, insertion of charts, text and visual effects. After editing, the video clips were rendered to produce a movie. Voice-over and background music were added by using CoolEdit 2000 and Adobe Premiere 6.0 programme. The finished version was reformatted into a CD-

ROM by using Datavideo Video Disk Recorder.

The 20 minute documentary contains FNAC procedures carried out mainly by consultant pathologists in specialised FNAC clinics. The range of lesions seen includes thyroid, parotid, lymph node and breast swellings. Stereotactic mammographic and bronchoscopic aspirates are done by the radiologist and chest physician respectively. Cytological preparation, staining, screening, diagnosis and reporting are recorded. At the end of the video, the pathologist's overview and patients' comments, resulting from another project, are highlighted.

KEYWORDS : Fine needle aspiration cytology (FNAC), video production, multimedia, documentary

THE USE OF STEM CELL RESEARCH IN TISSUE ENGINEERING

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Tissue engineering offers the promise of replacing injured or damaged tissue with living tissue that is designed and constructed to meet the needs of each individual patient. It is one of the fastest growing fields of research, with significant progress and development made in the past few years. A significant portion of this research centres around the use of stem cells to manufacture different types of tissue and different organs, which is possible because stem cells can differentiate into almost any tissue type.

The aim of this study is to obtain more information on the use of human stem cells in the making of human body parts which can be used for organ transplantation, tissue repair and other procedures. We searched through various journals and Internet articles to obtain more information on this topic and to also obtain more information on related subjects.

We found that stem cells are currently being used in various experimental procedures to treat many diseases and have potential therapeutic value. Our report contains a compilation of these experiments, along with our views on their benefit to mankind. Researchers are currently able to use stem cells to regenerate nerves, myocardium, hepatic tissue, pancreatic tissue (Islets of Langerhans), skeletal muscle, bone, skin, hair and blood. These new discoveries could be used to treat a variety of diseases such as neurodegenerative diseases, myocardial infarction, Duchenne's muscular dystrophy and even hair loss. Most of the current research is still conducted using experimental animal models, with human clinical trials expected to follow soon, and where clinical application in human beings will probably begin within the next decade.

There are also many ethical issues involved in the use of stem cells in tissue engineering, as current research mainly uses embryonic stem cells (ES), with protests against their use coming from many groups such as religious groups and pro-life movements. However, alternative methods of obtaining stem cells are emerging with the discovery of the presence of stem cells in adults, such as mesenchymal and hematopoietic stem cells (found in bone marrow), which could possibly allow allotransplantation and also autologous grafts of these stem cells into patients.

There are also ethical issues involved in cord blood storage, as cord blood is a source of hematopoietic stem cells, which can potentially be used to treat many diseases such as leukaemia.

We also carried out research on alternatives to using stem cells in tissue engineering, such as xenotransplantation and alternative tissue engineering methods (for example, Apligraf, a skin substitute).

In conclusion, it is without a doubt that stem cell research in tissue engineering promises to revolutionise medicine in a way never before seen, and that its therapeutic potential holds the key to alleviating the suffering associated with many diseases.

KEYWORDS : stem cell research, tissue engineering, embryonic

MORPHOLOGICAL TYPING OF VARIOUS SPECIES OF CANDIDA CULTURED ON CORNMEAL AGAR AND SABOURAUD DEXTROSE AGAR (SDA)

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In our current study that examine the macroscopic and microscopic morphology of numerous different species of *Candida*, 7 species of *Candida* were subcultured onto 2 different agars - sabouraud dextrose agar (SDA) and cornmeal agar. For SDA, loop streak method was applied to inoculate the organism onto agar plates. The SDA plates were then sealed and then incubated under 37°C for 48 hours. Daily inspection was done to observe the growth of *Candida* as well as to detect contamination. For cornmeal agar, a different technique was applied which is the 'slide culture' technique. Inoculation onto SDAs were used to observe colonial or macroscopic morphology of different *Candida* species. SDA provides all the essential growth nutrient besides being at a lower pH which is the best for the growth of *Candida* via budding. The surface growth consists of oval budding cells while the submerged portion consists of pseudomycelium and/or mycelium. The macroscopic observation and differentiation was done based on size, colour, surface, pattern, texture and rate of growth. On the other hand, slide cultures on cornmeal agar were used to observe the microscopic appearance of the *Candida* organism. Cornmeal agar is a starvation medium that lack many essential growth nutrients as compared to SDA. On these media, some species produce spores as a form of resistance to unfavourable environmental condition. In general, the many *Candida* species were seen to appear as yeasts, blastospores, mycelium or pseudomycelium and chlamydo spores under the microscope. However, each *Candida* species manifests a combination of different structures mentioned above. The structure exhibited by each species at a given point of time also depends on the media and environmental condition at which the *Candida* organism is grown.

KEYWORD : Colonial morphology, microscopic morphology, *Candida* spp., cornmeal agar, sabouraud dextrose agar, slide culture technique.

DETERMINATION OF RELEASE OF BISPHENOL A IN POLYCARBONATE BABY FEEDING BOTTLES

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Bisphenol A (BPA) is an endocrine disrupting chemical (EDC). It is used in the manufacturing of polycarbonate and various plastic articles such as baby bottles, food and drink packaging and water supply pipes. It mimics estrogen and acts by interfering with the normal function of the endocrine system. The effects that have been reported include reduced sperm count, increased prostate weight, early puberty in girls, increased rate of breast, prostate and testes cancers. BPA is lipophilic and can be stored in fatty tissues leading to cumulative effects in the body.

Our study objectives are to determine the levels of BPA that leached from polycarbonate baby feeding bottles. Fifty used baby feeding bottles were collected by donation and 11 new bottles were purchased. BPA was extracted from the bottles using the liquid-liquid extraction method. Levels of BPA were analyzed by the Gas Chromatograph Mass Spectrometer (GCMS).

Based on the results of the present study, BPA was found to leach out from the used polycarbonate baby bottles. The level of BPA that leached out from the used bottles was found to be 10 times higher than the new unused bottles. The difference was statistically significant. However, for both used and new bottles, the leaching of BPA was higher in bottles filled with distilled water at a higher temperature (> 80°C),

compared to room temperature.

KEYWORDS : Bisphenol A, baby feeding bottles, endocrine-disrupting chemicals (EDCs), liquid-liquid extraction, Gas Chromatograph Mass Spectrometer (GCMS).

FUNGI ISOLATED FROM HOSPITAL ENVIRONMENT

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Many of us fail to realize the importance of fungi found in the hospital environment. Although most of them are only environmental fungi and not pathogenic to us, still, some of these fungi may cause infection to the more susceptible group such as post-operative, immunocompromised and immunosuppressed patients. Since the mycotic disease represent 12-15% of all hospital acquired infection and can cause deaths in cancer patient and transplant recipient, it is hope that all the investigator will gain full appreciation of their clinical important.

Our objective here is to isolate and find out the environmental fungi which are found in the hospital. In the study, we aim to know about the various fungi found in different wards in UMMC, and analyze the frequency of them. We want to find out the potentially pathogenic fungi and all new species of fungi which cannot be found here. Through this, a better understanding about hospital-acquired fungal infection can be achieved.

The study was conducted in 2 parts. In the first part, we rearranged the data which was collected by the Microbiology Department of Malaya University in the previous study. The data includes several important factor such as species of fungus found, the condition of the wards (air-condition or non air-condition), weather when the plate was collected, and the temperature when culturing these fungus. The data was analyzed and how important these factors affect the growth of these species was found out. From what had been read, indoor spore usually average 30 to 80 percent of the outdoor spore level at the time of sampling. Air-conditioned wards may average 5-15 percent of outside air. Weather also plays an important role in affecting the species that were isolated. Rain washes the air clean on many spore types while it assists in the dispersion of the others. Rainy days may result in the lowering of the spore count and have a significantly different distribution of spore types.

In the second part, SDA plate were put in every wards, and were collected back and cultured at 30°C and 37°C separately. When a species grow only at 30°C, the fungus is not supposed to cause systemic human infection. If the fungus grows at both 30°C and 37°C, this means that this fungi can grow in the human body and can pose a problem to us. It is not possible for the fungi to only grow in 37°C. The macroscopic and microscopic morphology of the fungi was then studied and identified. The methods used were tease method, sub-culture method and slide-culture. The tease method was used to stain the fungi by using lactophenol cotton blue (LPCB). Sub-culture was also done in order to separate the colonies into different plates to prevent the over-grow fungi from covering the under-mature fungi. For the colonies which still could not been identified, slide culture was done. This is the best method for preserving and observing the actual structure of a fungus.

What we found was, non-sporulating *Chrysosporium* and *Monilia sitophilia* are the fungi mostly found in a hospital environment. They both grow in 30°C and 37°C. Non-sporulating *Chrysosporium* can cause rare skin infection while *Monilia sitophilia* rarely cause infection of the cornea. This 2 species of fungi are commonly considered as contaminant. Although other species are less common, they are not of less importance. *Penicillium marneffei* and *Aspergillus* group are the important fungi that infect immunocompromised patient which are also isolated in a hospital environment. *Aspergillus* cause aspergillosis which may be in a form of invasive infection, colonization, toxicosis or allergy. Species of aspergillus are opportunistic invader, infecting various sites in individuals with lowered resistance due to underlying immunocompromising, debilitating disease and prolonged treatment with immunosuppressive drugs.

KEYWORDS : Environmental fungi, opportunistic infection, medically important fungi, pathogenicity of fungal infection, fungal identification, fungal appearance.

SURVEY OF UPPER GASTROINTESTINAL BLEEDING IN SURGICAL WARD OF UMMC

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Objectives : The aim of our study is to determine the age, gender, racial distribution, incidence and causes of endoscopically diagnosed cases of upper gastrointestinal bleeding (UGIB) in UMMC.

Methodology : From January 2000 to December 2000, 206 cases were prospectively obtained on all patients that have been diagnosed with UGIB endoscopically. Data were collected with a standard data base and included demographic as well as specific data relating to UGIB.

Results : The incidence rate is the highest among the Chinese (51%). The male to female ratio is 1.78 with the mean age of 57.4 years. The incidence rises from 25 in those aged under 30 to 143 in those aged over 50. The most common presenting symptoms are a combination of haematemesis and malaena (38%). The most common diagnoses were bleeding gastric ulcer in 57(27.67%) patients, bleeding duodenal ulcer in 45(21.84%) and bleeding esophageal varices in 39(18.93%). Among the common risk factors were smoking (5.83%), alcohol (8.25%) and NSAIDs (15.05%). 152(73.79%) patients were treated with drug therapy. Therapeutic endoscopy was done on 37(17.91%) patients. 17(8.26%) patients had surgery during hospitalisation. The overall mortality rate was 9.71%. The majority of deaths occurred in patients in the age group of 50-69 years. Improvement in endoscopy accuracy and early endoscopy procedure should be carried out to lower the morbidity and mortality rates.

KEYWORDS : Upper gastrointestinal bleeding, hospital-based study.

RETROSPECTIVE STUDY OF PATIENTS WITH ACUTE MYOCARDIAL INFARCTION ADMITTED TO CORONARY CARE UNIT, UMMC

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Abstracts : Cardiovascular disease is the leading cause of death in Malaysia with Acute Myocardial Infarction (AMI) being the major cause. The occurrence of myocardial infarction is influenced by patient's background and modifiable risk factors. The management of AMI patients includes reperfusion therapy and adjunctive pharmacotherapy (antiplatelet and cholesterol lowering therapy). The effectiveness of the management will improve the survival rate and reduce the complications of AMI.

A retrospective study of 37 consecutive patients admitted to Coronary Care Units, University Malaya Medical Center (UMMC) with a diagnosis of AMI from 1 January to 30 April 2001 has been performed to determine the risk factors involved, associated therapy given and to investigate the common sites of infarction. The results show male sex (73%), Indian race (48.6%) and elderly age, i.e. >55 years old (54.1%) are more likely to develop a MI. The significant modifiable risk factors established were smoking (62.2%), hypertension (62.2%), diabetic (48.6%) and hypercholesterolemia (56%). Streptokinase thrombolytics therapy was underused, only 64.9% patients were administered with. For antiplatelet therapy, aspirin was the most widely used drug (81.1%), followed by clopidogrel (43.2%), and ticlopidine (8.1%). Cholesterol lowering therapy was administered in 70.3% of all post-AMI patient regardless of their cholesterol status and as high as 91.7% in post-AMI patient with confirmed hypercholesterolemia.

In conclusion, our results confirmed the association of cardiovascular risk factors with AMI, indicated the common sites of AMI patients in local settings and revealed the management of AMI patients with thrombolytic and adjunctive pharmacotherapy in UMMC.

KEYWORDS : Myocardial infarction, risk factors, cholesterol, aspirin, statin, streptokinase.

PATTERN OF GLUCOSE INTOLERANCE OR DIABETES MELLITUS IN WOMEN WITH PREVIOUS GESTATIONAL DIABETES MELLITUS (PGDM) AND MARKERS OF METABOLIC INSULIN RESISTANCE SYNDROME (MIRS)

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Objectives : The purpose of this study was to determine the incidence of diabetes in women with PGDM and to determine whether women with PGDM have other risk factors of the MIRS.

Methods : 1) The study consisted of 193 Malaysian women with PGDM who delivered in University Hospital in the past 3-7 years.

2) Blood for glucose (0 and 2 hour) was taken after a 12 hour overnight fast. These women underwent a 2 hour, 75 g oral glucose tolerance test (OGTT). Plasma glucose concentrations were measured with Beckman Glucose analyzer.

3) Body measurements and medical history were also taken.

Results : 1) Diabetes mellitus and impaired glucose tolerance developed in 92 (47.7%) women with PGDM.

2) Women who had progressed to diabetes mellitus were significantly older, heavier (high BMI) and have an abnormal waist-hip ratio compared to those who remained normal glucose tolerant.

3) Women who had progressed to diabetes mellitus had a significantly higher incidence of hypertension.

Conclusion : 1) We have shown that our Malaysian women with PGDM are at high risk of progressing to impaired glucose tolerance or diabetes mellitus and also MIRS.

2) They form a high risk group for cardiovascular diseases and preventive measures should be aimed at these women.

KEYWORDS Women with previous gestational diabetes mellitus (PGDM), metabolic insulin resistance syndrome (MIRS), oral glucose tolerance test (OGTT), women who progressed to diabetes were older and heavier, an abnormal waist-hip ratio, higher incidence of hypertension.

TELEMEDICINE : ITS PROGRESSION AND OBSTACLES IN UNIVERSITY MALAYA MEDICAL CENTRE(UMMC)

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Abstract : A survey on Telemedicine was conducted among doctors, nurses, medical students and public/patients in UMMC from May 21st until May 28th 2001. A total of 307 questionnaires were collected and analyzed. The questionnaire was designed basically to survey the percentage of computer literate amongst respondents, exposure and usage of Telemedicine and to obtain opinion pertaining to the implementation of Telemedicine in UMMC. Results showed that all the doctors were computer literate, followed by the nurses (98%), medical students (95%) and public (76%). The most exposed group to Telemedicine were the doctors, which constituted 89%. 58% of medical students have knowledge regarding Telemedicine followed by nurses (55%) and only 33% of public /patients knew about this network. Nurses (97%) showed that they were fully prepared to use Telemedicine in UMMC, followed by medical students (79%), public/patients (78%) and lastly the doctors (74%). The best way to implement Telemedicine in UMMC is to provide facilities, adequate training among the staffs and last but not least, more information exposure regarding Telemedicine.

KEYWORDS : Telemedicine, UMMC, survey.

CATHETER-RELATED BLOOD STREAM INFECTION AND NOSOCOMIAL PNEUMONIA IN INTENSIVE CARE UNIT PATIENTS

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The use of indwelling catheters and mechanical ventilators increases the risk of acquiring nosocomial blood stream infection and pneumonia in intensive care unit patients. Results of microbiological cultures of blood, central venous catheters and tracheal aspirates were obtained on 125 consecutive patients in the intensive care unit from January 1 to June 16, 2001. 36.4% of the blood cultures were positive, a reduction from 55% in 2000 (Yong, *et al*). The most common organisms isolated were MRSE (36.4%), *Staphylococcus epidermidis* (19.2%), *Klebsiella pneumoniae* (6.5%), *Enterococcus faecalis* (5.8%), MRSA (4.8%) and *Escherichia coli* (3.8%). The incidence of *S. epidermidis* and MRSE in positive blood cultures over this period increased from 12% to 55.7%. 76.9% of central venous catheter tip cultures were positive, an increase from 74.1% in 2000. Among the most common organisms isolated were MRSE (18.3%), MRSA (15.0%), *Stenotrophomonas maltophilia* (11.7%), while *Acinetobacter baumannii*, *Acinetobacter* species and *Klebsiella pneumoniae* each constituted (8.3%). These results suggest that adherence to a handwashing and aseptic catheter-handling policy has not been uniformly applied by ICU personnel. Cultures for tracheal secretion gave 77.4% positive cultures compared with 81.2% in 2000. *Pseudomonas aeruginosa* was the most frequent organism isolated (37.5%), followed by *Stenotrophomonas maltophilia* (12.5%) and MRSA (11.1%), while *Acinetobacter baumannii* and *Klebsiella pneumoniae* each constitutes 8.3% of the positive cultures. In conclusion, measures to reduce rates of blood stream infection and central venous catheter infection will depend on continued adherence by ICU personnel to infection control policies.

KEYWORDS : Blood stream infection, nosocomial pneumonia, surveillance, pathogenic organisms

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