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Distribution of gentamicin in ischaemic peripheries

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Aims: To analyse the distribution of gentamicin in patients with Peripheral Arterial Disease (PAD) and to determine whether the concentration of gentamicin present in the periphery is within the therapeutic range.

Methods: Approval from the University Research Ethics Committee and Data Protection Officer was obtained. A patient profile form was developed and validated to gather data regarding the patients' demographic characteristics, factors influencing wound healing and specific factors that might affect the distribution of gentamicin. Blood and tissue samples were taken from patients treated with gentamicin and undergoing debridement or amputation after written informed consent was obtained. The blood samples were centrifuged and the supernatant collected. The supernatant and tissue sample were stored at -20°C until the time of analysis. Gentamicin was extracted from the tissue samples using a sodium hydroxide method. The supernatant and tissue extract were analyzed using Fluorescence Polarisation Immunoassay technology.

Results: Tissue and blood samples from 35 patients have been collected. Of these, 20 were males and 15 were females, with a mean age of 68 years (range 31 to 91 years). Twenty-two patients had type 2 diabetes, 7 had type 1 diabetes and 6 were not diabetic. Twenty-three patients suffered from Ischaemic Heart Disease. From the 6 patients analysed to date, the dose of gentamicin was 240mg daily and the time of sampling ranged from 1 to 9 hours after gentamicin administration. The serum levels ranged from 1.12 to 9.75µg/mL (mean = 4.42µg/mL), while the tissue concentration ranged from 1.43 to 9.61µg/g (mean 3.80µg/g). Of the patients who were sampled within 2 to 3 hours, patients 2 and 6 had similar serum concentrations (5.72 and 5.17µg/mL respectively), however the tissue concentration of gentamicin for patient 6 was significantly lower (2.38µg/g) to that of patient 2 (5.80µg/g) probably because patient 6 suffered from significant PAD with monophasic waveforms whereas patient 2 had normal triphasic waveforms.

Conclusions: These preliminary findings show that the concentration of gentamicin in tissue reflects the concentration found in serum, except when the patient suffers from significant PAD with monophasic waveforms, where the concentration of gentamicin is reduced.

EDU 1

Clinical Teaching and the “modern day good doctor”

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Aims: There is growing awareness in the medical and lay community that being a good doctor requires more than sound medical knowledge and first-rate clinical skills. Numerous attributes are necessary to providing comprehensive care, including in particular the ability to communicate effectively with patients. A doctor is expected behave in a professional manner and simultaneously care in a humane way, giving due

consideration to the cultural and spiritual background of patients' lives. Moreover, in the Maltese perspective, patient advocacy and comprehensive social/medical education are also required of local physicians. It is becoming apparent that effective clinical teaching through example and proper instruction may go a long way to ingrain the above attributes into today's medical students.

Methods: Exposure to real-life situations and clinical problem-based teaching are undoubtedly a superior active form of clinical teaching. With adequate guidance, the learning experience will certainly be more rewarding to all concerned - lecturer/students. Ideally clinical teaching should initiate from the first year in Medical School and continue thereafter. Sustained good clinical teaching may also strengthen the continuum between the Maltese Medical School and Postgraduate Medical Education in the direction of specialisation in either Family Medicine or Hospital Practice.

The continuum mentioned above can be strengthened by applying greater efforts at improving Clinical Medical Education. Greater attention must be directed towards medical students during the clinical years. Clinical teaching can certainly be more fruitful if it is more accountable (for both lecturer and student) and beefed up with more zest.

Results: Improved clinical teaching will endear our medical students to the Maltese Medical Service, which helps in no small way in their education. Greater acquaintance with Medical Health Service personnel and its operating modes would improve on the delivery of the clinical service. It is more likely that improved clinical teaching will engender greater loyalty towards the Maltese Health Service.

Conclusions: The holy grail of clinical excellence emanates from several factors; however the interaction of clinical teacher and students is of principal importance. This interaction can take the form of mentorship during clinical teaching which may lead to a more holistically formed physician endowed with the attributes required of the “modern day good doctor”.

EDU 2

Walking knowledge of anatomy

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Aims: The final Anatomy Examination at the end of Year 2 is notoriously difficult and students prepare assiduously for it. The purpose of this study was to determine how much anatomy incoming Year 3 students remember 3 months after the final examination, so called walking knowledge.

Methods: In September 2008, a group of 45 medical students responded to the author's request to participate in a study. To minimize the risk of preparation, they were not informed as to the exact nature of the study until they turned up on the day. After being reassured that the data collected would not be referred back to the particular student, all students consented to participate. The students used an Audience Response System to answer True False questions flashed on the screen. The questions were all selected from the same examination paper sat by these students in May that year (i.e. 3 months earlier). All sections of the examination paper were covered by a minimum of 20 questions each.

Results: Using a 45% cut-off, all but 25% of the students “failed” the test paper overall. When examined by sections (or topics), most failed in Head and Neck, Neuroanatomy, Histology,

Embryology and Cell Biology. Most students recalled sufficient details of the upper and lower limb, thorax and abdomen to pass in these sections.

Conclusions: The “walking knowledge” of anatomy among incoming year 3 students is poor.

EDU 3

The student anatomy project: curse or blessing?

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Aims: Students are assigned an anatomy project in the summer between Years 1 and 2. The project is an attempt to integrate active learning, cooperative learning, and problem solving into undergraduate medical education. Students are provided with list of topics or they may propose topics. They may choose to work singly or in small groups with a supervisor of their choice. The Project and its write-up are assessed by two internal and one external examiner. The purpose of this study was to examine the results obtained by medical and dental students in the anatomy projects between 2005 and 2007.

Methods: The marks assigned to each of the projects were analysed and correlated with demographics as well as the final examination marks. Many other factors that influence project mark and final exam mark were not controlled for in this descriptive study.

Results: The study included 69 projects carried out by 138 students in 2 consecutive years. Most students chose to undertake dissection projects. Overall, Living Anatomy, Research, and Histology projects obtained higher marks than Dissection projects, while Imaging, Models and Embryology projects obtained lower marks than Dissection projects. In the case of dissection projects, Thorax, Abdo/Pelvis and CNS dissection projects obtained significantly higher marks than the remainder.

There was a statistically significant correlation between the marks obtained in the project and those in the final exam, in that students are more likely to perform better in that section of the exam that they undertook their project in. Moreover, there was a statistically significant correlation between student's mark in the project topic and the student's own mark in that same section of the exam. Students working in groups obtained significantly higher marks than those working alone, but the size of the group and its gender distribution did not appear to influence the result.

Conclusions: Apart from the fact that student projects contribute significantly to the department's projected teaching material, students appear to benefit from the exercise. The fact that only 5% of the final mark in the Anatomy Exam is awarded to the project may have affected some students' dedication to the quality of the project. Qualitative data are needed to explore the students' experience of the process.

EDU 4

Analysis of anatomy knowledge in senior medical students and foundation year doctors

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Aims: To provide a snapshot of the knowledge of anatomy in senior medical students and Foundation Year doctors, and to determine whether the methods of undergraduate teaching of anatomy (traditional versus modern) have any bearing on the results.

Methods: 115 senior medical students from the University of Malta and various UK Universities as well as Foundation Year doctors who graduated from these universities participated. They were asked to identify the carpal bones from a radiograph of a hand under the direct supervision of one of the authors. The carpal bones were chosen as a yardstick for anatomical knowledge since they can be easily examined objectively and are clinically relevant to doctors in many specialities.

Results: Participants were divided into 2 groups: Group A (59 participants) had pre-clinical teaching in anatomy using the traditional method of dissection (Universities of Malta and St. Andrew's in Scotland), and group B (56 participants) were taught using a more modern approach (other UK Universities). Only 21 candidates (18.3%) could correctly identify all 8 carpal bones (Group A 14, 23.7% vs. Group B 7, 12.5%). Overall, Group A identified 60.8% of the carpal bones correctly, compared to 48.2% of bones by Group B. The Scaphoid was the most commonly identified bone (88.7%), whilst the Triquetrum the least (31%).

Conclusions: Although this is a crude measure of anatomical knowledge, it is an objective test and thus provides an insight into the level of knowledge in medical students and junior doctors. Participants who were taught anatomy using traditional methods scored better than those who learnt anatomy in less detail. However, it is disappointing that less than a fifth of participants could name all 8 bones correctly. Therefore, given the gaps in knowledge of anatomy in both groups, and since knowledge of anatomy is essential in clinical diagnosis and management, teaching of this subject in the clinical years is necessary

EDU 5

Postgraduate health education environment at the Department of Medicine at Mater Dei Hospital

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Aims: To evaluate the postgraduate education environment at one of the largest departments at Mater Dei Hospital

Methods: All trainees on the staff of the Department of Medicine in July 2008 were asked to take part in a survey involving a self-administered validated and anonymous questionnaire on health education environment (PHEEM).

Results: Overall response rate was 57%, (pre-registration house officers: 10% , specialist registrars; 98%). The environment posed plenty of problems for 40% of trainees, and for the rest it had more positive than negative features, with room for improvement.