

## **Abstracts of Dissertations June 2003 Exit Assessment Exercise**

### **CLINICAL CHARACTERISTICS OF PATIENTS WITH SUSPECTED OBSTRUCTIVE SLEEP APNEA (OSA) IN A LOCAL HOSPITAL.**

Dr Chan Chi Wo, Department of Medicine, Queen Elizabeth Hospital (June 2003 AIM Exit Assessment Exercise)

**Background** Obstructive sleep apnea (OSA) is a syndrome with high prevalence and significant associated co-morbidities. The diagnosis of OSA depends on polysomnography that is a costly, time-consuming and labor-intensive procedure.

**Objectives** The objectives of this retrospective study is to determine the usefulness of clinical characteristics in i) identifying OSA and ii) identifying severe OSA among patients in the setting of a local hospital.

**Patients and Methods** Patients referred to the Sleep clinic of Queen Elizabeth Hospital from June 2001 to December 2001 were studied. Demographic data, body weight, body-mass index (BMI), neck circumference, symptoms of sleep disturbance, medical and ENT co-morbidities were surveyed. Comparisons were made between patients with and without OSA, and between patients with and without severe OSA.

Results: Patients with OSA were found to be heavier than those without. Patients with severe OSA were found to have heavier body weight, higher BMI, wider neck circumference and more prevalence in having smoking, alcohol drinking and enlarged tonsils. Sensitivity and specificity of predictors for OSA were presented. Stepwise logistic regression retained smoking, alcohol drinking, BMI and circumference as significant risk factors for severe OSA.

**Discussion** Validity of clinical information, reliability of polysomnography as a reference, risk factors for OSA, the role of OSA in associated co-morbidities and uncertainties about OSA were discussed.

**Conclusion** Referring physicians showed a good positive predictive value of 89.3% based presumably on clinical parameters alone while their negative predictive value could not be assessed. Highly sensitive or specific predictors for OSA were found among clinical parameters, but none with both properties was found. Smoking, alcohol drinking, BMI and neck circumference were significant risk factors for severe OSA in our study population.

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### **EFFICACY OF INTRADERMAL HEPATITIS B VACCINATION IN CHRONIC URAEMIC PATIENTS WHO PREVIOUSLY FAILED STANDARD INTRAMUSCULAR HEPATITIS B VACCINATION**

Dr. Kwok Oi Ling, Department of Medicine & Geriatrics, Caritas Medical Centre (June, 2003 AIM Exit Assessment Exercise)

**Background** Hepatitis B infection is a major public health problem especially in Asia where the prevalence of chronic hepatitis B is very high. However, up to around

30% of chronic uraemic patients failed to respond to standard intramuscular hepatitis B vaccination. In western societies, hepatitis B vaccination by intradermal route may be successful in these non-responders. However, data in Chinese is lacking. The objectives of this study were: 1. to assess the efficacy of intradermal hepatitis B vaccination in Chinese uraemic patients. 2. to assess the acceptability and side effect of intradermal hepatitis B vaccination

**Method** This is a prospective randomized control trial in local Chinese uraemic patients. All patients who were put on renal replacement therapy (including peritoneal dialysis, hemodialysis, renal transplant) and who previously failed to produce anti-HBsAb >10mIU/L after standard intramuscular hepatitis B vaccination will be randomized into two groups. Vaccination group received intradermal vaccination of 5 microgram every 2 weeks until anti-HBsAb>20mIU/L or maximum of 16 injections were given. Anti-HBsAb will be checked every 4 weeks during the vaccination period and every 2 months until 6 months after last dose of vaccination. Control group did not receive any injection and anti-HBsAb was checked 6 months after commencement of study.

**Results** All patients in the vaccination group (N=10) had seroconversion with anti-HBsAb>10mIU/L after 2 to 16 intradermal injections while none of the control patients (N=10) had seroconversion ( $p<0.001$ ). At six months post vaccination, the anti-HBsAb level was still very high in four patients (102mIU/L to 927.2mIU/L). These 4 patients had only received 2 intradermal injections. All patients accepted intradermal vaccination and only mild local side effects such as local swelling, redness and itchiness were found in 3 patients.

**Conclusion** Hepatitis B vaccination by intradermal route was an effective, acceptable and safe method to salvage a significant portion of Chinese uraemic patients who previously failed standard intramuscular vaccination.

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## **HIGH-DENSITY LIPOPROTEIN AND ATHEROSCLEROSIS**

Dr Sung Chi Keung, Department of Medicine, North District Hospital (June 2003 AIM Exit Assessment Exercise)

The objective of this observational study is to determine the change in HDL-C level induced by different type and dosage of statins. The effect of Fluvastatin 40mg, Simvastatin 10mg, 20mg, 40mg and Atorvastatin 10mg, 20mg 40mg daily were being studied. A total of 481 patients were included. Simvastatin was the most effective agent in raising the level of HDL-C (8.6, 9, 9.4% increment for 10mg, 20mg, 40mg daily respectively). No significant increment was demonstrated for Fluvastatin 40mg daily while a negative response (decrement in HDL-C) was demonstrated for atorvastatin (20, 40mg daily). Subgroup analysis showed that the change in HDL-C was not affected by the sex, use of beta-blocker, presence of diabetes and the baseline HDL-C.

**Background** A lot of evidences had shown that higher HDL-C level is desirable in patient with coronary heart disease. Among those pharmacological agents that can increase HDL-C level, fibrate and nicacin should be the drug of first choice. However, the effect of HMG co-A reductase inhibitor is chosen as the study target because of the following reasons.

Firstly, the benefit of HMG CoA reductase inhibitor in reducing cardiovascular event by reducing LDL-C is well established. As a result, statins is the most common lipid lowering drug prescribed. The choice and dosage of statins prescribed is usually determined by the degree of LDL-C reduction required. In patient with low HDL-C, the ability of statins in raising HDL-C should also be taken into consideration when deciding which types of statins to be used.

Secondly, in the study of the cost-effectiveness of HMG-CoA reductase inhibitor [47], it was found that the HDL-C effect of lovastatin lower the cost-effectiveness ratios by as much as 40%. As a result, those statins which are effective in lowering LDL-C and raising HDL-C are preferred.

Thirdly, different type of statins has been shown to produce different degree of change in HDL-C [51]. It would be useful to know if similar change is observed in our local population.

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## **GRAVES' OPHTHALMOPATHY**

Dr. Ng Chiu Ming, Jason, Department of Medicine, Queen Elizabeth Hospital (June 2003 Endocrinology, Diabetes and Metabolism Exit Assessment Exercise)

Graves' ophthalmopathy refers to the inflammatory response and its sequelae in and around the orbit in association with autoimmune thyroid disease. The condition has been recognized for more than three centuries, and has been described with various terms, such as Graves' ophthalmopathy, thyroid orbitopathy, thyroid eye disease, Graves' orbitopathy, endocrine exophthalmos. Apart from nomenclature, many other issues e.g. pathophysiology, risk factors, management strategies, predictors of patient response to treatment etc. are also not yet clearly delineated. The study of this condition and its management are fraught with difficulties because of the multiphasic nature of its natural history (1), the relative rarity of the condition and the heterogeneity of the patient population.

Conventionally, self-limiting and mild Graves' ophthalmopathy is managed with supportive measures, with symptom alleviation being the primary aim of treatment. Progression from mild to severe Graves' ophthalmopathy occurs in only a small proportion of patients. For patients afflicted with severe Graves' ophthalmopathy, highly disturbing symptoms such as proptosis and watering and grittiness of eyes, diplopia and disfigurement as well as the risk of compressive optic neuropathy demand a more aggressive approach. Because of the autoimmune and inflammatory nature of the disease, systemic steroids have been the mainstay of treatment. Other immunosuppressive drugs have also been tried: cyclosporin for instance has been shown to have some potential benefits (2). To remove autoantibodies, IVIG and plasmapheresis have been employed. In addition, isolated reports have suggested usefulness of somatostatin and orbital irradiation. This large number of treatment modalities reflects the difficulty in treating Graves' ophthalmopathy: response is rather heterogeneous, and most modalities of treatment have unacceptably high incidences of side effects.

Surgical treatment also has a role in Graves' ophthalmopathy. Decompression of the orbit is indicated in patients with compressive optic neuropathy. Surgery on eyelids

or extraocular muscles is advocated for correction of diplopia and disfigurement in the chronic fibrotic phase of the disease.

In this dissertation, I shall 1. review the literature on Graves' ophthalmopathy and summarize our current knowledge of this condition, focusing on the role of non-surgical management and 2. describe the results of my own pilot study in this area.

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## **CHRONIC HEPATITIS C INFECTION: PROGRESSION OF FIBROSIS AND TREATMENT**

Dr Hui Chee Kin, Department of Medicine, Queen Mary Hospital (June 2003. Gastroenterology and Hepatology Exit Assessment Exercise)

**Background** As there is a lack of data on the treatment outcome of hepatitis C virus (HCV) patients with genotype 6, we have conducted a study to compare the effect of interferon and ribavirin therapy in HCV genotype 1 and 6.

**Methods** This was a prospective study on patients with seropositive anti-HCV, persistently raised alanine transaminase levels and detectable HCV RNA. Patients were treated with subcutaneous recombinant interferon alfa-2b and ribavirin for 12 months. *Results:* Out of 40 patients, 16 patients had genotype 6 while 24 patients had genotype 1. End of treatment response was detected in 12 patients (75%) with genotype 6 and in 10 patients (41.6%) with genotype 1 ( $p=0.05$ ). Sustained virological response (SVR) was present in 10 patients (62.5%) with genotype 6 and in seven patients (29.2%) with genotype 1 ( $p=0.04$ ).

**Conclusion** Genotype 6 has a better response than genotype 1 and is associated with a higher SVR.

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## **CHARACTERIZATION OF EXPANDED HEMATOPOIETIC CELLS IN THE INTERMEDIATE CELL MASS OF THE ZEBRAFISH CHORDIN MORPHANTS GENERATED BY ANTI-SENSE MORPHOLINO**

Dr Leung Yu Hung, Department of Medicine, Queen Mary Hospital (June 2003 Haematology & Haematological Oncology Exit Assessment Exercise)

One of the challenges in the field of hematopoietic stem cell (HSC) research is to develop culture systems that induce symmetrical self-renewing cell divisions to expand HSC *in-vitro* such that small dose of HSC (e.g. from small units of umbilical cord blood) can be used for transplantation in adult patients. When cultured *in-vitro*, HSC most often give rise to two differentiated progenitor cells with limited self-renewal, leading to net loss rather than net gain of HSC, However, HSC undergo extensive proliferation during embryonic development. Therefore insights in signals that govern HSC proliferation during development will likely shed light on the way their fate can be manipulated to facilitate *ex-vivo* expansion.

The zebrafish *dino* mutant is characterized by increased ventral mesoderm specification and expanded intermediate cell mass (ICM), the site of embryonic

hematopoiesis. We phenocopied the mutant by knocking down the zebrafish chordin gene (an antagonist of bone morphogenetic proteins BMPs) using anti-sense morpholino (referred herein the chordin morphants) and characterized the phenotype of cells in the expanded ICM with a view to understand the mechanism of hematopoietic cell proliferation during embryonic development. The expanded ICM on day one post fertilization comprises a homogenous cell population characterized by abundant foamy cytoplasm and a nucleus with open chromatin. They express markers of primitive and definitive hematopoiesis as well as those of lineage committed progenitors. The ICM expansion demonstrates distinctive histological pattern, characterized by an ectopic BMP4 expressing zone and an endothelial cell lining. The hematopoietic cells differentiate into cells of erythroid and macrophage as well as blast-like morphology. Some erythroid cells shows dyserythropoiesis characterized by multi-nuclearity and positivity for PAS. The ICM expansion is significantly reduced by prior injection with BMP4 morpholino, suggesting that the phenotype is mediated by heightened BMP signaling secondary to the knock down of chordin. The chordin morphants may provide us with a model to investigate the cell-fate decision making of HSC during normal and deregulated embryonic haematopoiesis.

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## **CHEMOTHERAPEUTIC AGENTS IN THE TREATMENT OF NASOPHARYNGEAL CARCINOMA – EVOLVING CONCEPTS IN THE TREATMENT OF METASTATIC AND LOCOREGIONALLY ADVANCED DISEASE WITH EMPHASIS ON GEMCITABINE**

Dr Ma Buig Yue, Brigitte, Department of Medicine & Therapeutics, Prince of Wales Hospital (June 2003 Medical Oncology Exit Assessment Exercise)

Nasopharyngeal carcinoma (NPC) is unique amongst head and neck squamous cell carcinoma in its sensitivity to chemotherapy. Despite the lack of randomized data demonstrating a survival benefit over supportive care alone, complete remission and/or long-term survival are well described in patients with metastatic disease treated with platinum-based chemotherapy. Pertinent issues concerning the role of chemotherapy include: (1) locoregionally advanced disease: the adjunctive role of chemotherapy to curative radiotherapy and the optimal treatment sequence/ schedule; (2) metastatic setting: optimal dose-intensity, treatment-duration, and number of agents in multidrug regimens. There is now compelling evidence suggesting an improvement in overall and progression-free survival with the use of concurrent cisplatin and conventional RT over RT alone in the treatment of patients with International Union Against Cancer (UICC, 6<sup>th</sup> Ed.) stage III to IV disease. In comparison, there is a paucity of randomized data supporting the neoadjuvant or adjuvant approach using older agents that are often associated with significant toxicities. The introduction of more active and tolerable agents such as the taxanes, gemcitabine and capecitabine have prompted their incorporation into clinical trial protocols in the metastatic setting, or as neoadjuvant therapy prior to concurrent chemoradiation. In particular, gemcitabine is active alone as well as in combination with cisplatin in patients with metastatic NPC who are chemotherapy-naïve or –refractory. This article discusses the evolving concepts concerning the use of chemotherapy in patients with NPC, with emphasis on a single institutional review of clinical experience with gemcitabine in the treatment of metastatic NPC over a 12-months period.

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**COMPARISON OF TACROLIMUS AND NEORAL-BASED TRIPLE THERAPY IN CHINESE FIRST CADAVERIC RENAL TRANSPLANT RECIPIENTS USING ABBREVIATED AREA UNDER THE CURVE (AUC) APPROACH FOR DRUG MONITORING: A SINGLE-CENTRE EXPERIENCE**

Dr Cheung Chi Yuen, Simon, Department of Medicine, Queen Elizabeth Hospital (June 2003 Nephrology Exit Assessment Exercise)

Tacrolimus has been shown to be superior to cyclosporine with regard to prevention of acute rejection in different randomised studies. However, all the published data used whole blood trough level for tacrolimus and cyclosporine monitoring and titration. There were different studies showing that the use of limited sampling strategy and abbreviated formula to estimate the twelve-hour area under concentration-time curve ( $AUC_{0-12}$ ) allowed better prediction of drug exposure and lower incidence of acute rejection and nephrotoxicity than using trough level. A total of 77 consecutive Chinese first cadaveric renal transplant recipients were randomised to receive tacrolimus-based (n=43) or cyclosporine/Neoral-based (n=34) immunosuppressive regimen. Abbreviated  $AUC_{0-12}$  was used for drug monitoring. The patient and graft survival were comparable. Significantly fewer acute rejections were observed in the tacrolimus group: 2.3% (1/43) versus 17.6% (6/34) (P=0.05). Switch therapy due to rejection occurred in 4 patients in Neoral group but none in tacrolimus group. Using Kaplan-Meier Model, tacrolimus group was shown to have significant better rejection free survival (P=0.02). The serum creatinine and creatinine clearance were similar in both treatment groups but significantly fewer patients treated with tacrolimus had more than 30% increase in serum creatinine from baseline level at 3-month after transplantation (P=0.002). The maintenance dose of tacrolimus was 0.06 mg/kg/day and the maintenance dose of Neoral was around 3 mg/kg/day. Hypertension, hypercholesterolaemia, post-transplant diabetes mellitus, infection, malignancy and neurotoxicity were all similar in both groups but gum hypertrophy was significantly more common in Neoral-treated patients (P=0.014).

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**IMPROVED HEALTH-RELATED QUALITY OF LIFE AND LEFT VENTRICULAR HYPERTROPHY AMONG DIALYSIS PATIENTS TREATED WITH TOTAL PARATHYROIDECTOMY**

Dr Chow Kai Ming Department of Medicine & Therapeutics, Prince of Wales Hospital (June 2003 Nephrology Exit Assessment Exercise)

**Background.** We prospectively studied changes in the perception of health-related quality of life, pruritus, and degree of left ventricular hypertrophy in end-stage renal disease patients with tertiary hyperparathyroid disorder, before and 6 months after total parathyroidectomy treatment.

**Methods.** A series of 12 consecutive patients were enrolled. Throughout the follow up period, all subjects completed the Kidney Disease Quality of Life Short Form-36 (KDQOL SF-36) questionnaire at inclusion and after 6 months. Serial clinical and physiological parameters including uremic pruritus, blood pressure control and left ventricular hypertrophy measured by echocardiography were recorded.

**Results.** Mean scores of the KDQOL SF-36 questionnaires were substantially higher 6 months after parathyroidectomy, with reference to physical functioning, bodily pain, role-physical, role-emotional, symptom list and burden of kidney disease. Parathyroidectomy resulted in a 22% reduction in left ventricular mass index, with significant improvement from the baseline value of  $246 \pm 131$  to  $192 \pm 131$  g/m<sup>2</sup> ( $p=0.03$ ).

**Conclusion.** Our finding highlights the potential importance of parathyroidectomy in improving health-related quality of life and left ventricular hypertrophy among dialysis patient with tertiary hyperparathyroidism.

**Keywords** Parathyroidectomy; health-related quality of life; KDQOL-SF<sup>TM</sup>; left ventricular hypertrophy; dialysis

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## **HYPERLIPIDEMIA IN STABLE RENAL TRANSPLANT PATIENTS ON MAINTENANCE IMMUNOSUPPRESSION: A STUDY OF INCIDENCE, PREVALENCE, RISK FACTORS AND RELATIVE EFFICACY OF ATORVASTATIN AND SIMVASTATIN**

Dr Tse Kai Chung, Department of Medicine, Queen Mary Hospital (June 2003 Nephrology Exit Assessment Exercise)

**Objectives** To study the incidence, prevalence and risk factors of hyperlipidemia complicating stable renal transplant patients on different regimes of immunosuppressive therapy, and to compare the efficacy and tolerability of atorvastatin and simvastatin in the treatment of hyperlipidemia after kidney transplantation.

### **Patients and methods**

*Part I:* retrospective cohort study of serial lipid profiles in the first three years after renal transplantation from 1<sup>st</sup> April 1990 to 31<sup>st</sup> March 2000 in a single centre.

*Part II:* comparison of 20 patients with posttransplant hypercholesterolemia randomly selected from the above cohort and 20 historical controls matched for baseline data, with prospective follow up for one year after starting treatment for hyperlipidemia.

### **Results**

*Part I:* 221 patients were recruited, with 122 (55.2%) male patients and the mean age at transplant was  $37.76 \pm 10.03$  years. Most patients were on a cyclosporine based immunosuppression ( $n=202$ , 95.3%). There were significant increases in total cholesterol (TC), low density lipoprotein (LDL) and high density lipoprotein (HDL) after renal transplant, while a slight but significant decrease in triglyceride (TG) was noted. The incidence of new onset hypercholesterolemia (defined as TC  $\geq 6.3$ mmol/L or LDL  $\geq 4.2$ mmol/L) was 28.2% and 20.3% by the 1<sup>st</sup> year. In comparison, significant decreases were noted by the 2<sup>nd</sup> year (5.4%,  $p=0.000$  and 6.4%,  $p=0.003$ ) and 3<sup>rd</sup> year (9.5%,  $p=0.003$  and 4.9%,  $p=0.021$ ). However, no significant changes were noted in the incidence of patients having a high risk ratio (defined as TC/HDL  $\geq 5$ ), which was 6.9%, 4.9% and 10.3% by the 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> years respectively. The corresponding prevalence of TC and LDL above the same cut off points was 18.3% and 18.9% at baseline, 40.6% and 33.3% by the 1<sup>st</sup> year, 32.8% and 27.3% by the 2<sup>nd</sup> year, and 24.8% and 19.0% by the 3<sup>rd</sup> year, with significant

changes noted only for TC by the 1<sup>st</sup> year (p=0.000), but not at other time points. The prevalence of patients with a high risk-ratio was 45.0% at baseline, compared with 30.5% by the 1<sup>st</sup> year (p=0.002), 22.6% by the 2<sup>nd</sup> year (p=0.000) and 21.8% by the 3<sup>rd</sup> year (p=0.000). Overall, statin treatment was required in 6.8%, 13.6% and 21.7% of the patients by the 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> years respectively. Azathioprine had minimal effects on lipid disturbances, whereas a cyclosporine based regime was associated with significant increases in TC, LDL and HDL, but not for a tacrolimus based regime. Pre-existing hypercholesterolemia (relative risk=3.755, 95% confidence interval=1.466-9.620, p=0.006) and transplant age (relative risk=1.055, 95% confidence interval=1.009-1.104, p=0.019) were the only two independent predictors for posttransplant hypercholesterolemia.

*Part II:* the mean age at transplant for patients treated with atorvastatin was 38.41±12.97 years, with a transplant duration of 56.45±36.09 months. All patients were on a cyclosporin-based regime as maintenance immunosuppression. The average dose of atorvastatin was 9.25±2.82 mg/day. After 3 months of treatment, TC was reduced by 32.20% (from 6.88±0.78 to 5.06±0.99mmol/L, p<0.001), LDL by 45.18% (from 4.58±0.74 to 2.71±0.64mmol/L, p<0.001) and TG by 17.65% (from 2.10±1.44 to 1.86±1.59mmol/L, p<0.005). On the other hand, HDL was increased by 8.39% (from 1.39±0.44 to 1.48±0.32mmol/L, p<0.05). The effects on reduction of TC and LDL were sustained by the 12<sup>th</sup> month of treatment, which were 23.19% (5.12±1.36mmol/L, p<0.001) and 42.93% (2.71±0.77mmol/L, p<0.001) respectively. Compared with patients treated with simvastatin, treatment with atorvastatin achieved better reduction of LDL by the 3<sup>rd</sup> and 12<sup>th</sup> months, which were 45.18% vs. 30.61% (p=0.036) and 42.93% vs. 26.58% (p=0.019) respectively, while changes on TC, TG and HDL were similar at different time points. Both drugs were well tolerated.

**Conclusion** Renal transplant is associated with a characteristic pattern of dyslipidemia with raised TC, LDL and HDL. The incidence of posttransplant hypercholesterolemia peaks at the 1<sup>st</sup> year and decreases subsequently, in line with changes in the intensity of immunosuppression over time. Pre-existing hypercholesterolemia and transplant age are significant risk factors for posttransplant hypercholesterolemia, with significant proportions of patients having a dyslipidemic profile carrying a high cardiovascular risk by the 3<sup>rd</sup> year. Our data characterize the extent of problem of posttransplant hyperlipidemia and serve as a basis on which comparison can be made with respect to different ethnic groups and patients on different immunosuppressive regimes. Treatment with atorvastatin resulted in significant reductions of TC, LDL, TG and a tendency towards increase in HDL in renal transplant patients. The effects on reduction of TC and LDL were sustained on follow up. Compared with simvastatin at roughly equivalent dosages, atorvastatin achieved better reduction of LDL by the 12<sup>th</sup> month of treatment and was well tolerated. It should therefore be considered as first line treatment in addition to dietary modifications particularly in those patients with refractory severe posttransplant hypercholesterolemia.

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## **THE PATTERN AND MANAGEMENT OF URINARY PROBLEMS IN SPINAL CORD INJURY IN A LOCAL REHABILITATION UNIT**

Dr Chan King Chung, Department of Medicine, Kowloon Hospital (June 2003 Rehabilitation Exit Assessment Exercise)



**Objective** To determine the prevalence of urinary problems in newly diagnosed spinal cord injury (SCI) patients. To study the relationship between the type of bladder dysfunction and the radiological level of injury. To describe the pattern of bladder management in patients with urinary problems.

**Design and Setting** A retrospective review of patients with SCI in a local rehabilitation unit.

**Participants** 177 consecutive patients with newly diagnosed SCI between 1 January 2000 and 1 February 2003 were studied.

**Main Outcome Measures** Prevalence of urinary problems, urodynamic (UD) pattern, radiological level of injury, method of bladder management on admission, upon discharge and 3 months after discharge.

**Results** The prevalence of urinary problems was 62.7%. There was a correlation between radiological level of injury and the types of bladder dysfunction ( $p=0.01$ ). Sixty-four percent of patients with suprasacral injuries had upper motor neuron type of bladder dysfunction. Sixty-eight percent of patients with lumbosacral injuries had detrusor areflexia. In-dwelling catheter was the commonest method of bladder management on admission. Upon discharge, it was replaced by clean intermittent catheterization. Self-voiding became the most prevalent bladder management method 3 months after discharge. Urinary tract infection was the commonest complication in patients with voiding dysfunction,

**Conclusion** Urinary problems were common after SCI. The relationship between the radiological level of injury and the type of bladder dysfunction was neither specific nor absolute. UD evaluation provided a more precise diagnosis for SCI patients. The method of bladder management tended to change after discharge from hospital. The medical team is obligated to counsel SCI patients regarding bladder management options and advise them of the associated risks of each option.

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## **OUTCOMES OF LOWER LIMB AMPUTATION REHABILITATION IN HONG KONG**

Dr Kng Poey Lyn, Carolyn, Department of Medicine, Ruttonjee Hospital (June 2003 Rehabilitation Exit Assessment Exercise)

**Objectives** This study aims to evaluate the outcomes of above and below knee amputee rehabilitation at a local rehabilitation unit and to identify factors predictive of failing prosthetic fit.

**Methods** Retrospective review and follow up interview of above and below knee amputees admitted to the Kowloon Hospital during 1.1.2000 to 31.7.2002. The primary outcome measured is failed prosthetic fit at discharge. Other outcomes include prosthetic use, functional status and mortality.

**Results** Our study sample of 97 amputees has a median age of 71 years and a male predominance (72%). Vascular causes accounted for 81% of amputations, which were below knee in 58%, above knee in 25% and bilateral in 14%. 29% failed prosthetic fit at discharge. Of the 69 amputees who succeeded, 88% used

their prosthesis for walking. 46% were limited to indoor walking and 42% were outdoor walkers. Despite significant gains in FIM score from 91 to 108 and motor FIM from 59 to 76 during a median stay of 75 days, overall functional status declined post-amputation. At discharge, nursing home was required in 26%, wheelchair use in 18% and ADL independence 63% compared to 8%, 6% and 94% respectively at admission. Follow-up telephone interview with 66 amputees found 68% continued to use their prosthesis for walking but 21% had died.

Using logistic regression, failure of prosthetic fit was significantly and independently predicted by a low admission motor FIM score (AMFIM), cardiac disease (OR 8.3) and premorbid non-outdoor ambulatory status (OR 3.9). The presence of all three risk factors has a positive predictive value (PPV) 100% and specificity of 100%. A cut-off of AMFIM  $\leq$  50 has a sensitivity of 71%, specificity 90%, PPV 74%, NPV of 89% and a 22 fold odds of failing prosthetic fit. The AMFIM score was the sole significant predictor of death using Cox regression analysis.

Based on these findings, a model for early screening of high risk amputees is proposed to guide realistic goal setting and management.

**Conclusions** Lower limb amputees have adverse outcomes with failed prosthetic fitting in 29% and deaths in 21%. A low admission motor FIM score strongly predicted failed prosthetic fit and death. Cardiac disease and premorbid non-outdoor ambulatory status also predicted failed prosthetic outcomes. Knowledge of predictive factors may minimise inappropriate prescriptions of prosthesis and guide goal setting by means of a proposed clinical screening algorithm.

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## **A STUDY OF CLINICAL PROFILES AND HOSPITAL REHABILITATION PATHWAY FOR TRAUMATIC BRAIN INJURED PATIENTS IN HONG KONG**

Dr Ng Yee Wah, Department of Medicine, Kowloon Hospital (June 2003 Rehabilitation Exit Assessment Exercise)

**Background** Care of traumatic brain injured (TBI) patients are demanding and costly as various medical complications, neurological deficits and disabilities are frequently encountered. We have relatively distinctive phases of care for TBI patients in our current model.

**Objective** 1) to define the injury characteristics and clinical profiles of traumatic brain injured patients in acute stage, 2) to evaluate the delivery of rehabilitation service from acute hospital to rehabilitation unit and 3) to explore the measures to improve the efficacy and effectiveness of rehabilitation service in post-traumatic phase.

**Design** A retrospective study.

**Patients** Traumatic brain injured patients with acute care received in Queen Elizabeth Hospital and had been transferred to Kowloon Hospital for rehabilitation from 01/01/1998 to 31/03/2002 were recruited. Patients with chronic subdural haematoma were excluded from the study.

**Method** the case records during hospitalization were reviewed and relevant descriptive data including patient demographics, pre-injury and injury characteristics,

acute and post-acute management, complication episodes in acute care and functional outcomes were collected.

**Result** The pre-injury and injury characteristics were defined. Complexity of treatment was illustrated. Secondary medical complications and neurological deficits were common.

**Conclusion** The accessibility of comprehensive rehabilitation service and timing of delivery of services were important elements to be considered in improving the effectiveness of the rehabilitation program. Strong connection of acute care with rehabilitative care is beneficial for optimizing recovery from brain injury.

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## **A RETROSPECTIVE STUDY ON THE CLINICAL PREDICTORS FOR RETURN TO PRODUCTIVE ACTIVITY AND POST-DISCHARGE STATUS AFTER TRAUMATIC BRAIN INJURY REHABILITATION IN A REGIONAL NEURO-REHABILITATION UNIT**

Dr Yeung Man Pun, Eric, Rehabilitation Medicine, Kowloon Hospital (June 2003 Exit Assessment Exercise)

**Objective** 1.To evaluate the relationship between acute injury characteristics and patients demographic data with subsequent return to productive activity and post-discharge residential status. 2.To evaluate the relationship between the telephone FIM (Functional Independence Measure ) and CIQ ( Community Integration Questionnaire ) at 6 month to 1 year post injury with subsequent return to productive activity. 3.To assess the usage of neuro-psychological test on the subsequent return to productive activity within one month after out of post-traumatic amnesia.

**Design** Retrospective observational cohort study.

### **Methods Study sample-**

All patients, who suffered from traumatic brain injury and being transferred from neurosurgical unit of Queen Elizabeth Hospital (QEH) between 1<sup>st</sup> April 1999 to 30<sup>th</sup> September 2002 and required subsequent inpatient rehabilitation in Kowloon Hospital (KH) were enrolled. Patients with age less than 15 years old would be excluded.

**Data collection** All patients' demographic data, post injury Functional Independence measure (FIM), Mini-mental state examination (MMSE) and the results of the neuro-psychiatric tests would be collected from the inpatient record from KH. All acute clinical factors would be collected from the inpatient records from QEH and KH. A telephone follow-up interview would be conducted to all eligible patients and verbal consent would be gained during the telephone interview. The premorbid and current employment status, FIM, CIQs and the missing data in the inpatient record would be obtained during the interview. In the interview, patients' caregiver or next of kin would be asked for the above information in order to avoid the potentially inaccurate results from subjects with persistent cognitive impairment except the patients are living alone and independent after discharged.

**Main outcome measure** Patients would be regarded as successful on return to productive activity when they could return to preinjury-comparable work, full time or part time schooling and homemaking. Post-injury homemaking was defined as a

score of 6 or greater on the CIQ home competency subscale. Patients who could live alone or live with their family would be regarded as successful on return to home. Standard descriptive statistics were calculated. Univariate logistic regression analyses would be performed to determine the associations of independent variables with return to productive activity and post discharge status. Multiple logistic regression analyses would be applied for adjusted associations. A *p* value of less than 0.05 was considered statistically significant.

**Result** There were 86 participants in this study. 47% of the subjects could resume the productivity activities during the telephone interview while 14% of the patients failed to return to home after discharge. Admission, discharge and telephone FIM, MMSE, telephone CIQ, the occupational status at 6 month after the injury, patient's educational level and premorbid neurological disease were found to be associated with RTPA. Patients who had neurological disease or required to stay in KH more than 6 weeks were less likely to return to home after rehabilitation. There is no statistically significant association between the patients' capacity on returning to productive activities and the neuropsychological test performed during the inpatient rehabilitation. The clinical significance of these variables and the limitations of this study would be discussed.

**Conclusion** Inpatient FIM, MMSE and post discharge FIM and CIQ score, premorbid educational level and the occupational status 6 month post injury were associated with patients who can return to productive activity. Neuro-psychological tests which were performed within one month after the resolution of post-traumatic amnesia could not predict the patient's capacity on return to productive activities.

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## **ROLE AND SAFETY OF HYDROXYCHLOROQUINE IN RHEUMATIC DISEASES - A CLINIC BASED STUDY AND LITERATURE REVIEW**

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Antimalarials have been used in the treatment of rheumatic disease for more than a century. The two most commonly used antimalarials are hydroxychloroquine (HCQ) and chloroquine. They have been shown to be effective in different connective tissue diseases including systemic lupus erythematosus (SLE) and rheumatoid arthritis (RA). Antimalarial is still one of the commonest drugs to be prescribed in our SLE patients. Antimalarials are well known for their good safety profile. One of the most significant side effects that raises both patients' and physicians' concern is retinal toxicity. Fortunately, it is an uncommon side effect if we use the drug according to the recommended dose. However, there is still controversy about the optimal frequency of monitoring of retinal toxicity. The role of hydroxychloroquine and the frequency of retinal toxicity in our clinic will be reviewed.

Note: For obtaining the full dissertation, please contact the author directly.