

## **Abstracts of Dissertations**

### **December 2010 Exit Assessment Exercise**

#### **CLINICAL CHARACTERISTICS, CO-MORBIDITIES AND OUTCOME OF 140 LOCAL ACROMEGALIC PATIENTS**

Dr Wu Pui Yee, Department of Medicine & Geriatrics, Tuen Mun Hospital (November 2010 Endocrinology, Diabetes & Metabolism Exit Assessment Exercise)

**Introduction** Acromegaly is a disease characterized by the presence of excessive growth hormone. Although multiple treatment modalities are available, many patients have their diseases remaining active. It leads to a wide range of morbidities, as well as an increased risk in malignancy and mortality. Local epidemiological studies are limited.

**Objective** To review the clinical characteristics, associated morbidities and outcome of a group of acromegalic patients in three Hong Kong public hospitals.

**Patients and methods** This was a retrospective observational study. Acromegalic patients who had active follow-up in Tuen Mun Hospital, Pok Oi Hospital and Queen Mary Hospital from January 2004 to December 2009 were identified via Clinical Data Analysis and Reporting System. Baseline clinical characteristics, treatment and outcome were recorded. Co-morbidities including hypertension, diabetes mellitus, obstructive sleep apnoea, colonic pathology, clinical heart failure, carpal tunnel syndrome and osteoarthropathy, together with malignancy and death were assessed.

**Results** A total of 140 patients were included, with 43 patients from Tuen Mun Hospital and Pok Oi Hospital, and 97 patients from Queen Mary Hospital. The sex distribution was equal. The median age-at-diagnosis was 43-year-old (range 18 to 83), with the median duration of follow-up of 139 months (range 18 to 486). There were 72.6% patients with pituitary macroadenoma, 24.2% with microadenoma, and 3.2% with no pituitary lesion or empty sella.

Hypertension was most frequently reported (52.9%), followed by osteoarthropathy (35.7%) and diabetes mellitus (33.6%). Five patients (3.6%) died, and 14 patients (10.0%) suffered from malignancy at any time point.

Majority of patients received multiple different treatments with 31.4% patients received a combination of surgery, radiotherapy and medical therapy. One hundred and fifteen patients (82.1%) received surgery while 65 patients (46.4%) received radiotherapy. Bromocriptine (60.0%) was the most commonly used dopamine agonist. Somatostatin analogue was used in 24.3%, and 9.3% had used it for more than a year. A total of 50 patients were cured (35.7%), an additional 27 patients (19.3%) had their diseases under control. Discordant results occurred in 28 patients (20%). Active diseases were present in 35 patients (25%). Patients with previous surgery, longer disease duration, smaller tumour, and tumour without optic nerve involvement were more likely to have their diseases cured.

**Conclusion** The baseline clinical characteristics, outcome and associated morbidities in 140 local acromegalic patients were mostly compatible with patients from other parts of the world. Although treatments had improved throughout the years, still a significant number of patients had their diseases remaining active, subjecting

them to increased risks of co-morbidities, cancer, or even death. Effort should be paid to control the biochemical markers to target, as well as diagnose and manage the associated morbidities.

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## **REHABILITATION OUTCOMES OF CHINESE PATIENTS WITH DIFFERENT COGNITIVE FUNCTION IN GERIATRIC DAY HOSPITAL**

Dr Chan Fei, Department of Medicine, Queen Mary Hospital (December 2010 Geriatric Medicine Exit Assessment Exercise)

**Introduction** The effect of cognition on rehabilitation outcomes has been controversial. This study was conducted to examine the effect of cognition on rehabilitation outcomes in older patients undergoing Geriatric Day Hospital (GDH) training and the predictors of rehabilitation outcome 6 months after discharge from GDH.

**Methods** It was a retrospective study performed in the GDH of Fung Yiu King Hospital. Cognitive status was assessed with Cantonese Version of Mini-Mental State Examination (C-MMSE). Patients were stratified into 3 C-MMSE groups: (< 10), ( $\geq 10-19$ ), and ( $\geq 20$ ). Functional Independence Measure (FIM) upon GDH admission (FIM admission), discharge (FIM discharge) and 6 months after discharge (p6m FIM) were measured. FIM gain was FIM discharge minus FIM admission while FIM efficiency was FIM gain divided by number of GDH sessions attended. FIM discharge  $\geq 90$  was defined as satisfactory outcome of rehabilitation.

**Results** 547 patients who attended GDH between 1<sup>st</sup> January 2005 to 31<sup>st</sup> December 2007 were studied. A significant positive correlation was observed between C-MMSE admission and FIM discharge ( $p < 0.001$ ). There were significant differences in the FIM admission and FIM discharge among the 3 C-MMSE groups, with lower discharge scores in low C-MMSE groups ( $p < 0.001$ ). The FIM gain and FIM efficiency were not different among different C-MMSE groups. Multivariate analysis showed that C-MMSE admission (odds 1.08, 95% CI: 1.01-1.15,  $p = 0.03$ ) and FIM admission (odds 1.33, 95% CI: 1.25-1.41,  $p < 0.001$ ) were both positive independent predictors for a satisfactory rehabilitation outcomes (FIM discharge  $\geq 90$ ). When patient's FIM was reassessed 6 months after discharged from GDH, 164 (39.2%) of patients showed a drop of p6m FIM while overall p6m FIM remained significantly higher than FIM admission ( $p < 0.001$ ). Multivariate analysis showed that cognitive function was not an independent predictor for drop of p6m FIM. FIM admission was a negative predictor (OR 0.97, 95% CI = 0.96 – 0.98,  $p < 0.001$ ) and Parkinsonism was a positive predictor (OR 3.2, 95% CI = 1.35-7.7,  $p = 0.008$ ) for drop of p6m FIM.

**Conclusion** Cognitive function was not associated with FIM gain, FIM efficiency and p6m FIM drop. This suggested that selected patients with impaired cognition could still benefit from GDH rehabilitation and a significant proportion of rehabilitation gain could be maintained 6 months after discharge from GDH.

**Implications** The results of this study draw the attention of geriatric care workers to the cognitive impaired patients in the GDH. As our population is aging, there is an increasing need for rehabilitation services for patients with cognitive impairment. As selected patients with cognitive impairment could still benefit from GDH, it is important for the geriatric care workers to aware of special rehabilitation needs of cognitive impaired patients.

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## **CHARACTERIZATION OF CLOSTRIDIUM DIFFICILE ASSOCIATED DISEASE IN HONG KONG**

Dr Hui Wai Man, Department of Medicine, North District Hospital (December 2010 Infectious Disease Exit Assessment Exercise)

**Background** Epidemiology of *clostridium difficile*-associated disease (CDAD) has been changing. There was a global increase in incidence and severity of CDAD. Outbreaks of CDAD caused by the ‘hyper-virulent’ isolates (REA BI/ PFGE NAP-1/ toxinotype III/ ribotype 027) were widely reported. However, local data are limited.

**Methods** A retrospective study was performed on hospitalized patients with CDAD during a 15-month period (Jan 2007-Mar 2008). Demographic and clinical characteristics of patients with CDAD were analyzed and compared with controls. Patients with CDAD were further stratified into severe and mild diseases, and subgroup analysis was performed. The stool samples from patients with CDAD were cultured. Drug susceptibility tests and detection of 027 ribotype were performed.

**Results** Ninety nine patients with CDAD and 200 controls were reviewed. When compared with controls, patients with CDAD were more likely to have prior hospitalization (64% vs. 35%,  $p < 0.001$ ), and exposure to antibiotics (93% vs. 77%,  $p = 0.001$ ) and proton pump inhibitors (13% vs. 5%,  $p = 0.01$ ). Seventy nine patients with severe CDAD were identified. Patients with severe CDAD had an older mean age (75 vs. 67,  $p = 0.02$ ), higher incidence of fever (63% vs. 5%,  $p < 0.001$ ), leukocytosis (52% vs. 0%,  $p < 0.001$ ), hypoalbuminaemia (54% vs. 5%,  $p < 0.001$ ), and more likely to have prior exposure to antibiotics (98% vs. 75%,  $p = 0.003$ ). A trend of higher mortality rate in patients with severe CDAD was observed (15% vs. 10%,  $p$ -value non-significant). Isolates from patients with severe CDAD were more likely to be resistant to moxifloxacin and gatifloxacin (25% vs. 10%,  $p = 0.42$ ). No isolate of ribotype 027 was identified.

**Conclusions** In this cohort of patients with CDAD, severe disease was common. Risk factors for acquiring CDAD and severe disease were commensurate with literature reports. A trend of resistance to fluoroquinolones with anti-anaerobic activity was observed in patients with severe disease. Ribo-type 027 strain was not identified.

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## **A RETROSPECTIVE STUDY ON NON-TYPHOIDAL SALMONELLA BLOOD STREAM INFECTION IN PRINCESS MARGARET HOSPITAL 2000-2008**

Dr. Zee Sze Tsing, Jonpaul, Department of Medicine and Geriatric, Princess Margaret Hospital (December 2010 Infectious Disease Exit Assessment Exercise)

**Background** Non-typhoidal *Salmonella* (NTS) is one of the most important pathogens of foodborne infection worldwide; however, invasive disease with bacteraemia is not common among individuals with normal immunity.

**Objective:** To describe clinical features of patients with NTS blood stream infection (BSI), to identify risk factors for extra intestinal focal infection (EIFI) and to recognise factors associated with adverse outcome.

**Method and Setting** A retrospective study was performed for all adult inpatients of a regional tertiary hospital with NTS BSI between Jan 2000 and Dec 2009.

**Results** There was a high prevalence of medical comorbidities among the 54 patients with NTS BSI. Twenty one (38.9%) patients were immunocompromised due to immunosuppressive therapy or human immunodeficiency virus(HIV) infection. *Salmonella* group D (88.9%) was the most prevalent serogroup. Antibiotic resistance to extended spectrum cephalosporin remained rare; however, nalidixic acid was only susceptible in 24%. Eight patients had endovascular infection while 4 had septic arthritis/osteomyelitis. Presence of endovascular prosthesis ( $p=.002$ ) was associated with endovascular infection. Overall in-hospital mortality was 18.5%. Solid organ malignancy [odds ratio (OR) 15.19 95% confidence interval (CI) 1.78-130.14  $P=.013$ ] and higher absolute neutrophil count (OR 1.16 95% CI 1.02-1.32  $P=.024$ ) were independent predictors for in-hospital mortality. In the subgroup with endovascular infection, in-hospital mortality and 90-day post discharge mortality were 25% and 50% respectively.

In **conclusion**, NTS BSI causes significant morbidity and mortality in those with chronic illness and impaired immunity. Endovascular infection has exceedingly high mortality and should be aggressively managed.

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## **A STUDY TO EVALUATE THE TIMING OF INITIATION OF PERITONEAL DIALYSIS ON CLINICAL OUTCOMES IN STAGE 5 CKD PATIENTS.**

Dr. Cheng Hon Wai, Department of Medicine and Geriatrics, Tuen Mun Hospital (November 2010 Nephrology Exit Assessment Exercise)

**Background** The optimal time to initiate CAPD in uremic patients remains a subject of controversy. Controversy arises from the fact that there is no objective, uniform criteria to decide the starting point of dialysis. The National Kidney Foundation has set up the KDOQI guidelines to address this issue which were largely based on expert opinions only. This is a retrospective study to evaluate the timing of initiation of peritoneal dialysis on clinical outcomes in stage 5 CKD patients in a local hospital.

**Method** Patients were recruited from the registry of all newly started dialysis patients from a regional hospital in Hong Kong during the period of November 2005 to June 2007. Patients were eligible for inclusion if they have end stage renal failure to the extent that dialysis was imminent. Renal functions were assessed by serum creatinine levels and calculated glomerular filtration rate. Patients were excluded from the study if they were only diagnosed to have end stage renal failure without prior history of renal disorder on first presentation to the Accident and Emergency Department and started on long term dialysis after emergency dialysis therapy. Patients were excluded if there were active malignancy and severe concomitant diseases.

**Results** One hundred ninety-six patients commenced dialysis therapy during the period. Twenty seven patients were excluded from the study according to the exclusion criteria. Sixty seven patients belong to the late starters group (39.9%). The remaining one hundred and one patients belong to the timely started group (60.1%). There are no statistical difference in the baseline characteristics between both groups, in terms of primary causes of renal failure, age, gender and comorbidities. Estimated GFR was similar in both groups when they were first under nephrologist assessment for dialysis. After the delay, there was statistical difference in eGFR when the first session dialysis

was performed in both groups (9.28ml/min in timely starters vs 7.47ml/min in late starters,  $p=0.009$ ).

The mortality rate after three years is not statistically different between the two groups. However, the late starters tend to have higher mortality rate than the timely starters as shown by the Kaplan Meier survival curve ( $p=0.168$ ). The divergence is observed from fifteen months after starting dialysis.

The late starters have statistically more admissions during the first six months after starting dialysis (4.94 admissions in late starters vs 3.85 admissions in timely starters ( $p=0.049$ )). Late starters require statistically more acute haemodialysis before commencement of long term peritoneal dialysis. (30.7% in timely starters vs 50.7% in late starters,  $p=0.01$ ). Late starters also tend to have more episodes of cerebrovascular accidents than the timely starters. ( $0.22 \pm 0.46$  in late starters vs.  $0.07 \pm 0.26$  ( $p=0.005$ ) of the timely starters)

**Conclusion** The timely starters have no significant survival benefit over the late starters after three years. However, the timely starters have less hospitalizations in the first six months after initiating peritoneal dialysis, cerebrovascular accidents and require less acute haemodialysis before long term peritoneal dialysis.

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## **CLINICAL OUTCOMES OF DIALYSIS PATIENTS WHO HAVE UNDERGONE PERCUTANEOUS CORONARY INTERVENTIONS**

Dr Lo Kwok Chi, Department of Medicine and Geriatrics Kwong Wah Hospital (November 2010 Nephrology Exit Assessment Exercise)

**Background** Cardiovascular disease is one of the major causes of morbidity and mortality in end-stage renal disease (ESRD) patients on dialysis. Apart from traditional cardiovascular risk factors so well known in the general population, non-traditional risk factors, such as extracellular volume overload, inflammation, anaemia hyperphosphataemia and abnormal calcium-phosphate control, have been found to be important among chronic kidney disease (CKD) patients. Coronary bypass surgery in patients on dialysis has been associated with an increased risk of perioperative complications and a 30-day mortality of 9.38%. Reported data on percutaneous coronary intervention (PCI) among dialysis patients have revealed poor acute and long-term outcomes, when compared with non-uraemic patients. The local situation is unique where coronary bypass surgery is infrequently performed among CKD patients, let alone patients on dialysis. Indeed, the mainstay of intervention for our dialysis patients with significant coronary artery diseases is PCI. Locally, we have the peritoneal dialysis-first policy; and the data on the outcome of dialysis patients undergoing PCI is lacking.

**Method** The study is a retrospective analysis of the outcomes of dialysis patients ( $n = 48$ ) who received PCI after initiation of either peritoneal or haemodialysis from January 2004 to December 2009 in Kwong Wah Hospital compared with control patients ( $n = 96$ ) with normal renal function.

**Results** The most common indications for PCI in dialysis group was myocardial infarction. Bare metal stent (BMS) (68.8%) was more commonly used in the dialysis group when compared with drug-eluting stent (DES). The overall PCI-related complication rate was similar in both groups, but there was a higher rate of in-hospital

mortality (2 vs 0) in the dialysis group. Significant differences in biochemical parameters at the time of PCI in the dialysis group when compared with controls include: higher triglyceride (TG), lower LDL cholesterol, lower haemoglobin, lower serum albumin and higher phosphate levels. In terms of the use of medications, clopidogrel (85.3 vs 99%,  $p = 0.001$ ), angiotensin-converting enzyme inhibitor (ACEI) or angiotensin II receptor blocker (ARB) (43.8 vs 63.5%,  $p = 0.024$ ) and lipid lowering drugs (52.1 vs 80.2%,  $p < 0.0001$ ) were less frequently been given at the time of PCI in the dialysis group than in the controls. On follow-up, for a mean duration of 58.2 months, the dialysis group showed a significantly higher occurrence of major adverse cardiovascular events (58.3 vs 39.6%,  $p = 0.033$ ), cardiac mortality (20.8 vs 7.3%,  $p = 0.018$ ) and all-cause mortality (62.5 vs 15.6%,  $p < 0.0001$ ) than the control group.

**Conclusions** Although the clinical outcomes of dialysis patients who have undergone PCI remain poor when compared to control patients with normal renal function, better modification of non-traditional risk factors, optimized use of medical therapies and intervention procedures may bring potential improvements in the quality of life and survival rate of this group of patient.

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## **TRANSIENT AXONAL GLYCOPROTEIN-1 (TAG-1) POLYMORPHISM AND ITS CORRELATION WITH CLINICAL FEATURES AND PROGNOSIS IN CHRONIC INFLAMMATORY DEMYELINATING POLYRADICULONEUROPATHY (CIDP)**

Dr Pang Yin Yu Shirley, Department of Medicine, Queen Mary Hospital (November 2010 Neurology Exit Assessment Exercise)

**Background** Chronic inflammatory demyelinating polyradiculopathy (CIDP) is a heterogeneous group of acquired disorders characterized by peripheral nerve demyelination. Previous studies have shown a good response to immunotherapy but a significant proportion of patients continue to require maintenance therapy. A recent study identified a potential genetic marker for responsiveness to intravenous immunoglobulin (IVIG). In this study, CIDP patients were examined to look for association between clinical, electrophysiologic, genetic factors and treatment response as well as risk of treatment dependence.

**Methods** Case records of 32 CIDP Chinese patients diagnosed between January 1995 and March 2010 at the three Neurology centers on Hong Kong Island (namely, Queen Mary Hospital, Pamela Youde Nethersole Eastern Hospital and Ruttonjee Hospital) were reviewed to examine their clinical features, electrophysiologic parameters on presentation, disease course and outcome. Blood samples were available from 22 patients and 147 controls. DNA was extracted from peripheral leucocytes and the transient axonal glycoprotein 1 (TAG-1) genotype for the previously reported single nucleotide polymorphism (SNP) was determined using the Sequenom MassARRAY system.

**Results** The overall response rate to immunotherapy with prednisolone, IVIG or plasma exchange (PE) was 80% with no difference detected among the three therapies. Clinical features such as age of onset, duration of symptoms, presence of diabetes mellitus (DM), presence of sensory symptoms and modified Rankin score (mRS) on presentation did not predict treatment responsiveness. Electrophysiologic parameters on the initial nerve conduction study were also not associated with

treatment response. Fifty-eight percent of our patients were dependent on maintenance therapy after a mean follow up period of 5.8 years. Clinical features such as age of onset, duration of symptoms and presence of DM were not predictive of treatment dependence. Patients with more prolonged distal motor latency (DML) in the upper limbs had a higher risk of treatment dependence ( $p=0.03$ , OR 1.03). Patients with a higher mean motor nerve conduction velocity (NCV) in the upper limbs showed a trend of lower risk of treatment dependence but this did not reach statistical significance. TAG-1 genotypes in 147 healthy controls and in 22 CIDP patients with regard to the SNP designated by rs2275697 were determined and no significant difference in allele frequency was detected. Furthermore, among CIDP patients, there was no association between TAG-1 genotype and age of onset, presence of DM, mode of onset and disease course. However, those who were homozygous for G had significantly more prolonged DML. Those with the G allele present (patients who were either homozygous for G or heterozygous with G/A) had significantly lower compound muscle action potential (CMAP) amplitude in the upper limbs and more prolonged DML in the lower limbs than those homozygous for A.

**Conclusions** The overall treatment response rate in CIDP is high and even patients with advanced age, unfavorable electrophysiologic features and severe disability can improve with treatment. However, a significant proportion will require long-term maintenance therapy to prevent relapses. Patients whose initial nerve conduction study showed more prolonged DML in the upper limbs were at increased risk of being treatment dependent. The TAG-1 G allele was found to be associated with the severity of demyelination on the initial nerve conduction study in CIDP patients, which suggests a role of TAG-1 in the pathogenesis of demyelination.

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## **USEFULNESS OF ABCD2 SCORE IN PREDICTION OF 90-DAYS RISK OF STROKE IN PATIENTS WITH TRANSIENT ISCHEMIC ATTACK IN A CHINESE, NON-TERTIARY CARE COMMUNITY HOSPITAL**

Dr Wong Kwok Kui, Department of Medicine & Geriatrics, Yan Chai Hospital (November 2010 Neurology Exit Assessment Exercise)

**Background** Stroke was the second cause of mortality worldwide in 2004 and ranked the fourth cause of death in Hong Kong in 2008. It causes significant morbidity and exerts much burden to the health care system. Cerebrovascular disease contributed about 26,400 in-patient discharges and deaths in all hospitals and 3,691 deaths in 2008. It also accounted for 8.9% of all deaths in 2008. The crude death rates were 55.9 for male and 50.2 for female per 100,000 population of respectively in 2008. Age-standardized death rates were 35.8 for male and 24.0 for female per 100 000 standard population in 2008.

It has been noted that about 23% major stroke was frequently preceded by transient ischemic attack. It varies from hours to days. Prompt recognition and stratification of patients with transient ischemic attack is necessary to arrange earlier assessment.

Transient ischemic attack (TIA) is an acute neurological deficit of vascular origin which does not persist and is assumed to have a satisfactory or full recovery within hours and at most one day. It implicates the presence of athero-thrombotic disease of the brain. Patients suffering from TIA have a high rate of stroke. In a large observational study by Johnston in 2000, 10% of patients with TIA suffered from stroke recurrence within 3 months and about half of them occurred within 2 days of

the indexed TIA admission. The development of stroke was greatest during the first year which was around 11.7-13%, especially the first month which ranges from 4.4-8%.

Transient ischemic attack (TIA) is recognized to be a medical emergency because of its 7-days, 30-days and probably 90-days stroke risk are high. Various clinical prediction tools are proposed to aid the risk stratification after TIA. The “ABCD” and its later refinement – “ABCD2” scores with the addition of diabetes mellitus, are attempted to quantify this risk by using clinical symptoms and signs. Those with the highest scores have significantly increased risk of early stroke. These scores had been validated in several studies but were not universally successful in different populations. As a result, some controversies remain regarding the general application of the scores worldwide. Some groups have questioned the usefulness of a scores because they do not incorporate the features of carotid disease and other risk factors of potential cardio-embolic source.

Identification of risk factors and exclusion of stroke mimics are important. Earlier investigations and aggressive treatments help in reducing the incidence of stroke and thus its mortality and morbidity. Patients with TIA will usually be admitted to the hospital for investigation and treatment. However, it is questionable whether all TIA patients should be admitted. The California Score – the risk score had been first adopted by Johnston et al. who investigated on 1,707 patients in whom 5 factors were found to be associated with recurrence at 90-days. They were age of more than 60, presence of diabetes mellitus, duration of symptom more than 10 minutes, motor difficulties and language difficulties.<sup>i</sup> Later, the introduction of simple 6-points risk score – ABCD Score incorporating age, blood pressure, clinical features and duration of symptoms could reliably stratify patients into high risk and low risk of early stroke within 7-days after transient ischemic attack. The score had been subsequently validated in different studies in which ABCD Score equals or greater than 5 could predict 95% of strokes occurring in the first 7 days after TIA. ABCD2 Score – the combination of both California Score and ABCD Score had been demonstrated its use in differentiating patients suffering from true TIA with high score from those of alternative diagnosis with low score. However, conflicting results had also been shown in a number of validation studies.

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## **A PILOT CROSS-SECTIONAL STUDY OF TREATMENT COMPLIANCE IN HOME NON-INVASIVE VENTILATION**

Dr Cheng Suet Lai, Linda, Department of Medicine & Geriatrics, United Christian Hospital (December 2010 Respiratory Medicine Exit Assessment Exercise)

In the past, patients with acute respiratory failure necessitating ventilatory support required the use of artificial airways for mechanical ventilation in the intensive care unit. For patients who failed to be weaned from mechanical ventilation, only a small proportion of them could return home because of the complexity of technology and intensive nursing care involved in home mechanical ventilation (HMV). With advances in technologies, mechanical ventilation has been revolutionized, and nowadays home non-invasive ventilation (NIV) are available to provide ventilatory support in selected patients with acute respiratory failure using specially designed facial mask, without the placement of artificial airways. Since NIV machines are more light-weighted and do not require an artificial airway, it becomes feasible to support patient with chronic respiratory failure by HMV using NIV machine.

Throughout the world, HMV is increasingly employed to treat patients suffering from chronic hypercapnic respiratory failure (CHcRF) [1-8]. A similar trend has been observed in Hong Kong [6]. The majority of CHcRF patients in Hong Kong were treated by NIV, with bi-level pressure support ventilation being the commonest mode. Chronic obstructive pulmonary disease (COPD) accounted for about half of the HMV cases. Other indications were obesity-hypoventilation syndrome (OHS), COPD/obstructive sleep apnoea (OSA) overlap syndrome, neuromuscular disorders, thoracic cage disorders, and various other causes of nocturnal hypoventilation syndrome [6].

Acute application of NIV has been shown in multiple randomized controlled trials (RCT) to improve arterial blood gases (ABG), reduce intubation and mortality rates in patients suffering from exacerbations of COPD complicated by acute hypercapnic respiratory failure (AHcRF) [9-13]. Despite the success of NIV in AHcRF of COPD, survivors had a high risk of re-admission and life-threatening events in ensuing years [14]. There are theoretical benefits of using home nocturnal NIV in COPD patients. However, results of previous RCTs have been inconclusive [15-18]. More recently, an RCT conducted in Hong Kong showed that in COPD patients who survived AHcRF after treatment with acute NIV, continuation with home NIV was associated with a reduced risk of recurrent AHcRF when compared with control [19]. A recent Australian study suggested that hypercapnic COPD patients being treated with home NIV had better survival than the control group for a duration of 3.5 years, after which the benefit was lost. However, quality of life was worse in the home NIV group [20].

Despite the widespread use of home NIV to treat CHcRF, which is a potentially life-threatening condition, little is known about patients' compliance to home NIV, factors affecting the compliance, and the impact of poor compliance. Only one study reported the compliance of home NIV in six patients over the age of 75 years [21]. Home NIV was well adapted with an average daily use of  $10.5 \pm 2$  hours. Common side effects reported were nasal soreness, air leak, dryness of nasal mucosa, abdominal distension and sleep disturbance. However, this study had a small number of patients ( $n = 6$ ), and all were at the age of 75 years or older.

On the contrary, the compliance to a similar device, continuous positive airway pressure (CPAP) machine for the treatment of obstructive sleep apnoea syndrome (OSAS), has been widely studied. The estimated non-adherent rate was 29 to 83 percent, with non-adherence defined as a mean of  $\leq 4$  hours of use per night [22,23]. The average duration of CPAP use was approximately 5 hours per night across numerous studies [24]. Despite the high efficacy of CPAP to reverse upper airway obstruction in OSAS, treatment effectiveness was limited by variable adherence. Side effects of CPAP use have been reported in as many as 65% of patients and included nasal congestion, dry nose or throat, and discomfort associated with mask pressure and air leak [25-28]. Despite high prevalence of side effects, they have not been found to have any association with CPAP adherence, except claustrophobia [29]. The potential predictors of good adherence that have been reported included (1) high self-reported daytime sleepiness and moderate to severe OSAS [30,31]; (2) good adherence to CPAP during first week of therapy [22,32]; (3) low nasal resistance [33,34]; (4) nasal pillows as interface [35]; and (5) certain psychological traits including presence of problem solving skills [36], optimism regarding benefit of CPAP [37,38], and self efficacy [37,38]. Early identification and management of side effects of CPAP therapy, intensive support including education and home visits,

and cognitive behavioural therapy have been proposed to be potential ways to improve compliance [23,39]. A study involving 108 patients showed that augmentation of CPAP education and support did not increase the compliance, but led to a greater improvement of quality of life in Chinese population [40]. The evidence of routine application of heated humidification was conflicting, some studies suggested its use would predict better adherence [41,42], while some did not [43,44]. Different modes of CPAP delivery, auto-titrating or fixed or bi-level positive airway pressure failed to demonstrate any effect on adherence in several studies [23,45,46]. However, in a local study, auto-CPAP was associated with higher CPAP usage, although no difference was shown in improving symptoms and health status when compared with fixed-CPAP, and more patients ultimately chose fixed-CPAP [47]. Similar study has not been performed for home NIV machines.

We performed a pilot study to investigate the compliance of home NIV use, explore factors affecting the compliance and the impact of compliance on various health outcomes in patients with CHcRF.

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## **LUNG ABSCESS: A RETROSPECTIVE STUDY OF CLINICAL PROFILE, MICROBIOLOGY, AND MANAGEMENT IN A HONG KONG REGIONAL HOSPITAL**

Dr Hong Yeuk Fai, Department of Medicine & Geriatrics, Tuen Mun Hospital (December 2010 Respiratory Medicine Exit Assessment Exercise)

**Background** Lung Abscess (LA) is a serious pulmonary infection associated with significant mortality. Despite advancement in different treatment options in recent decades, there is scarcity of local data concerning epidemiology and clinic outcomes.

**Objectives** To investigate the features, outcomes and prognostic factors of lung abscess in a regional hospital of Hong Kong.

**Methods** A retrospective review of all patients with a diagnosis of lung abscess admitted between January 2000 and Mar 2009 to Tuen Mun Hospital was performed. Demographical, clinical, radiological, microbiological data and clinical outcomes were reviewed from case records. Risk factors for poor outcomes were analyzed.

**Results** Ninety-six patients were included (mean $\pm$ SD age 54.1 $\pm$ 17.5 years old, from 18 to 89 years) with a male-to-female ratio of 5.4:1. The most common comorbidity was diabetes mellitus (24%), nearly all of which were poorly-controlled. Primary abscess constituted 81.5% of cases. Right upper and lower lobes were both more frequently involved. *Klebsiella pneumoniae* and methicillin-sensitive *Staphylococcus aureus* were the two commonest organisms identified from various cultures. Seventy-seven (80.2%) patients received antibiotic treatment alone for a mean duration of 35.8 $\pm$ 16.5 days. Seventeen (17.7%) patients had also percutaneous catheter insertion for drainage. The inpatient mortality rate was 11.5%. By logistic regression, dementia (OR 79.81), shortness of breath on presentation (OR 7.25), desaturation on admission (OR 7.22), and positive blood cultures (OR 9.35) were independent risk factors associated with inpatient mortality.

**Conclusion** In a local setting, lung abscess commonly occurred in men and poorly-controlled diabetes. Aerobic pathogens like *K. pneumoniae* were commonly isolated than the anaerobes. Antibiotic and percutaneous intervention (in selected

cases) may suffice in treating great majority of lung abscess. Inpatient mortality of 11.5% was comparable to previous foreign data in the post-antibiotic era. Dementia, shortness of breath on presentation, desaturation on admission, and positive blood cultures were independent risk factors associated with inpatient mortality.

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## **ENDOBRONCHIAL ULTRASOUND EBUS GUIDED TRANSBRONCHIAL NEEDLE ASPIRATION TBNA EXPERIENCE IN A REGIONAL HOSPITAL**

Dr. Ng Lai Yun, Department of Medicine & Geriatrics, Kwong Wah Hospital  
(December 2010 Respiratory Medicine Exit Assessment Exercise)

**Background** Evaluation of mediastinal lymphadenopathy and of mediastinal lymph node (MLN) staging for thoracic malignancies often requires a biopsy. The gold standard of mediastinal lymph node sampling is by mediastinoscopy, but this procedure is considered invasive, required general anaesthesia, and costly. Endobronchial ultrasound-guided transbronchial needle aspiration (EBUS-TBNA) is an accurate and minimally invasive procedure; the emergence of the convex probe EBUS (CP-EBUS) allows real-time visualization of needle sampling within the target area.

**Objective** To evaluate the clinical utility and experience of this new EBUS-TBNA service established in our hospital.

**Design** A retrospective study was conducted from July 2008 to July 2010. Patients who underwent EBUS-TBNA with undiagnosed intrathoracic adenopathy or cancer staging as the primary indications were included. The demographic and clinical data were obtained and diagnostic yield from the results of EBUS was compared to other clinical information obtained.

**Results** During the study period, 105 EBUS examinations were performed in 103 patients, in which 98 sessions of EBUS-TBNA were performed in 96 patients, of whom 68 were men and 28 were women, with the mean age of 65.2 years. There were 475 EBUS-TBNA samples obtained from 148 lymph nodes; the average lymph node size was 1.47 cm (range, 0.33-4 cm in short axis); with an average of 2.84 passes performed. In the 73 patients who was suspected to have lymph node metastases, a diagnosis or cancer stage could be obtained in 63 patients (86%). There was no major complication.

**Conclusion** EBUS-TBNA is useful in evaluating mediastinal and hilar lymph nodes for diagnosis and staging of non-small cell lung cancer, it is a minimally invasive and relatively safe procedure.

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

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