

Clinical opinions in general medicine

The last collection of opinions for 2003 reflects the international nature of our readership with two contributions from Singapore. The outbreak of SARS in Hong Kong and Toronto reminded us that the man-versus-microbe battle is far from over, let alone won. Dr Goh wisely reminds us that prevention is better than cure, particularly when there is no cure available, and stresses the importance of good infection control – echoes of MRSA perhaps? Closer to home, Douglas reminds us that snoring is not only a cause of marital disharmony but an important risk factor for heart disease when due to obstructive sleep apnoea. Papers on new thinking on the management of hypertension and contributions from the world of paediatrics and neonatology round off this issue of clinical opinions. As always, we welcome contributions from our readers, particularly those from overseas.

Clinical opinion: an outbreak of Severe Acute Respiratory Syndrome (SARS)

- TITLES:** (i) A cluster of cases of SARS in Hong Kong.
(ii) Identification of SARS in Canada.
- KEYWORDS:** pneumonia, respiratory distress, fever, coronavirus.
- AUTHORS:** (i) Tsang KW, Ho PL, Ooi GC *et al.*
(ii) Poutanen SM, Low DE, Henry B *et al.*
- JOURNALS:** (i) *N Eng J Med* 2003; **348**:1977–85.
(ii) *N Eng J Med* 2003; **348**:1995–2005.

SUMMARY

Tsang *et al.* report a cluster of ten patients presenting with SARS in Hong Kong. There was an incubation period of two to 11 days. All presented with fever of $>38^{\circ}\text{C}$ for over 24 hours and rigors occurred in all but one. Eight had a cough while nine had chest signs on physical examination. All had abnormal chest radiographs with most of them present on initial presentation. The majority had lymphopaenia with mildly raised aminotransferase. All ten patients were epidemiologically linked to the first patient, who eventually died.

In Canada, Poutanen *et al.* also report a cluster of SARS in ten patients. Fever and a non-productive cough with abnormal chest radiographs were present in all cases. Lymphopaenia was detected in eight out of nine patients tested, while aminotransferase and creatinine kinase were elevated in more than half of the cases. Five patients required mechanical ventilation and three eventually died. Again, all the cases had a positive contact history with an index patient who travelled to Hong Kong.

Microbiological investigations for the common respiratory pathogens were negative in both reports.

OPINION

The worldwide SARS epidemic is one of the most major outbreaks in recent years and these two papers describe its occurrence in two countries. All of the cases could be traced to an index case. Fortunately, although SARS appears to be a highly contagious disease, transmission has largely been limited to close contacts.

Significant features present in the majority of patients and, according to both reports, include initial high fever, cough (usually non-productive), abnormal chest radiographs and a positive contact and/or travel history. Hence, these symptoms are included in the World Health Organization (WHO) case-definition criteria of suspected and probable SARS.

Laboratory abnormalities, though present in most cases, are relatively non-specific. Although molecular (PCR) and antibody (ELISA) testing have already been developed, the diagnostic criteria for these tests' results have yet to be defined.

Even though current data have implicated a novel coronavirus as a causative agent, drug and vaccine development is still in its infancy. With only supportive treatment available, the old adage, 'prevention is

better than cure', certainly holds true as we are once again reminded of the importance of good infection control and public health measures in controlling the spread of this virus.

Dr Kian Peng Goh, Registrar, Singapore

Clinical opinion: heart failure and obstructive sleep apnoea

TITLE: Cardiovascular effects of continuous positive airway pressure in patients with heart failure and obstructive sleep apnoea.
KEYWORDS: Ischaemic heart disease, sleep apnoea.
AUTHORS: Kaneko Y, Floras JS, Usui K *et al.*
JOURNAL: *N Engl J Med* 2003; **348(13)**:1233–41.

SUMMARY

Obstructive sleep apnoea can subject the failing heart to adverse haemodynamic and adrenergic loads and so may contribute to the progression of heart failure. The authors tested the hypothesis that treatment of obstructive sleep apnoea by continuous positive airway pressure in patients with heart failure would improve left ventricular systolic function. Twenty-four patients with a depressed left ventricular ejection fraction (45% or less) and obstructive sleep apnoea, who were receiving optimal medical treatment for heart failure, underwent polysomnography. On the following morning, their blood pressure and heart rate were measured by digital photoplethysmography, and left ventricular dimensions and left ventricular ejection fraction were assessed by echocardiography. The subjects were then randomly assigned to receive medical therapy either along (12 patients) or with the addition of continuous positive airway pressure (12 patients) for one month and then were reassessed. In the control group there were no significant changes in the severity of obstructive sleep apnoea, blood pressure, heart rate, left ventricular end-systolic dimension, or left ventricular ejection fraction during the study. In contrast, continuous positive airway pressure markedly reduced obstructive sleep apnoea, reduced the daytime systolic blood pressure from a mean (\pm SE) of 126 ± 6 to 116 ± 5 mmHg ($P=0.02$), heart rate from 68 ± 3 to 64 ± 3 bpm ($P=0.007$), and left ventricular end-systolic dimension from 54.5 ± 1.8 to 51.7 ± 1.2 mm ($P=0.009$), and improved the left ventricular ejection fraction from 25.0 ± 2.8 to $33.8 \pm 2.4\%$ ($P < 0.001$). Obstructive sleep apnoea may thus have an adverse effect in heart failure that can be improved with CPAP therapy.

OPINION

There is considerable overlap between the risk factors for ischaemic heart disease and the obstructive sleep apnoea/hypopnoea syndrome (OSAHS): common factors include middle age, male gender, obesity and smoking. However, cardiologists have been relatively slow to realise the potential significance of OSAHS in their patients. The above paper demonstrates in a relatively small group of patients that blood pressure and cardiovascular function can be improved in patients with heart failure who have obstructive sleep apnoea if their apnoea is appropriately treated. It remains to be seen whether this might translate into longer-term function improvement. Work in progress in other countries suggests this may be the case. In recent years much more attention has been paid to central apnoeas and Cheyne–Stokes respiration in heart failure than to obstructive apnoea. Many recent studies have confirmed that obstructive apnoeas are much more common than central apnoeas and Cheyne–Stokes in chronic heart failure. Thus cardiologist and general physicians should ask such patients about sleepiness and snoring and refer appropriate patients for sleep investigation and treatment. The blood pressure benefits demonstrated in this study extend those now reported in three randomised controlled studies in patients with OSAHS, but without heart failure, where CPAP reduced mean diastolic blood pressure by up to 10 mmHg. Think sleep apnoea – it is common and highly treatable!

Professor Neil Douglas, Professor of Respiratory and Sleep Medicine, Edinburgh

Clinical opinion: highlights of the recently released JNC 7 report

TITLE: *The Seventh Report of the Joint National Committee (JNC) on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (The JNC 7 Report).*

KEYWORDS: Hypertension, prevention, management, cardiovascular disease, diuretics.

AUTHORS: Chobanian A, Bakris GL, Black HR *et al.*

JOURNAL: *JAMA* 2003; **289**:2560–72.

SUMMARY

The recently released JNC 7 takes into account evidence from several landmark trials that have been published since the last report in 1997. It recognises the need to simplify the existing blood pressure (BP) classification. A new category, prehypertension (systolic BP 120–39 mmHg or diastolic BP 80–9 mmHg), has been added.

Systolic hypertension is recognised as a more important cardiovascular risk factor than its diastolic counterpart in those aged 50 years and older. For individuals aged 40–70, each increment of 20/10 mmHg in BP from 115/75 mmHg doubles the risk of cardiovascular disease.

Thiazide diuretics are recommended as initial therapy in most patients either alone or in combination as the recent Antihypertensive and Lipid-Lowering Treatment to Prevent Heart Attack Trial (ALLHAT) has shown that it is more effective than other agents in preventing cardiovascular events.

Most patients will require more than one drug to reach their target BP and a second drug from another class should be added if the BP is more than 20/10 mmHg above the target.

OPINION

The inclusion of a prehypertension stage recognises that these patients should not be 'left alone', as they have an increased risk for developing hypertension. Lifestyle modification is the mainstay of treatment for this group while drug therapy is reserved for compelling indications.

Goal BP remains unchanged at <140/90 mmHg for most patients and <130/80 mmHg for patients with chronic renal disease or diabetes mellitus (DM). This is comparable with the National Institute for Clinical Excellence guidelines target BP of <140/80 for prevention of nephropathy in low-risk Type 2 DM and ≤135/75 if microalbuminuria/ proteinuria is present.

The use of thiazide diuretics as first-line therapy in uncomplicated hypertension has been emphasised. This recommendation is consistent with the Scottish Intercollegiate Guidelines Network (SIGN) 2001 guideline on *Hypertension in Older People*. In contrast with the European Society of Hypertension (ESC) 2003 Guidelines, the JNC 7 does not employ global cardiovascular risk stratification as part of its management. This is one area which should be considered in future JNC guidelines.

In summary, the JNC 7 report is comparable in most areas to other major guidelines on hypertension. While there may not be any ground-breaking changes in terms of management, it fine-tunes existing guidelines in the hope of reducing the mortality, morbidity and lifetime risk of developing hypertension.

Dr Kian Peng Goh, Registrar, Singapore

Clinical opinion: mortality in very low birthweight infants

TITLE: Infant to staff ratios and risk of mortality in very low birthweight infants.

KEYWORDS: infant, newborn, staff, mortality, very low birth weight.

AUTHORS: Callaghan LA, Cartwright DW, O'Rourke P *et al.*

JOURNAL: *Arch Dis Child Fetal Neonatal Ed* 2003; **88**:F94–F97.

SUMMARY

A previous study conducted in seven neonatal units in Scotland and two in Australia has suggested that the risk of infant mortality increased as the infant/staff ratio increased. There was a 79% increase in odds

of mortality when more than 1.7 infants were assigned per nurse per shift. The current study is a retrospective study of the mortality of 692 infants who weighed less than 1,500 g at birth and were admitted to the Royal Women's Hospital, Brisbane between January 1996 and December 1999. The objectives of the study were to examine the effect that infant/staff ratios, in the first three days of life, have on the survival of these very low birthweight infants. The study was designed thus: infant/staff ratio was divided into terciles; low (1.16–1.58), medium (1.59–1.70) and high (1.71–1.97) infants per staff member. Total numbers in each tercile were 232, 230 and 230 respectively. The main outcome measures were survival to discharge from hospital, adjusted for initial risk using the Clinical Risk Index for Babies (CRIB) score, and adjusted for unit workload. The results of the study showed that the three terciles proved to be similar for CRIB score. There were 80 deaths; mortality in the low tercile was 30%, medium was 37% and high 13%. The findings suggest an improved survival with the highest infant/staff ratio.

OPINION

The CRIB score is a well validated method of assessing initial neonatal risk of mortality in infants of birthweight less than 1,500 g. It is reassuring in this study that the three terciles were comparable for CRIB score, thus implying that the population of babies in each group was similar in disease severity.

At first sight the current study seems to show that the mortality *falls* when there are *fewer* staff or *more* babies. This contradicts previous work in adult intensive care units, which indicates that there is increased mortality associated with increased nursing workload. Iatrogenic complications are more common where the patient/staff ratio is high.

In neonatal intensive care, when the unit is busy, temporary staff are drafted in to cope with the workload, and one might expect results to be poorer at such a time. The current study however takes account of this variable. It is nevertheless possible that a core of highly-motivated experienced staff produce excellent results, and that, even when there is no change in workload, adding less experienced nurses to the pool has a deleterious effect, perhaps because of their training needs.

There is one final sobering explanation for the current findings, and this hypothesis may apply to all intensive care, no matter what the patient age-group. Increased staff numbers may cause more needless interventions and that these may prove harmful to our patients. First do no harm.

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