Commentary

Recently published papers: pneumonia, hypothermia and the elderly

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Abstract

Pneumonia (hospital-acquired and community-acquired) is commonly encountered in intensive care. Several papers recently published on this subject have shed more light on different aspects of this important topic. Hypothermia has been shown to improve post-arrest outcome, but how often do we use it? And finally, several papers have recently appeared in the journals related to the admission of the elderly to the critical care area and their outcome.

Community-acquired pneumonia

Community-acquired pneumonia (CAP) is associated with considerable morbidity and mortality. Several factors are associated with a more severe clinical course, for example increasing age, immunosuppression, and smoking. Recently, several studies have been published focusing on factors potentially affecting outcome from CAP.

A publication in *Chest* [1] prospectively reviewed the admission characteristics and data obtained during the hospitalised stay and outcome of 1,347 patients admitted to a large Spanish teaching hospital. Specifically, the authors studied the effect of alcohol on the aetiology and severity of CAP, comparing those with a previous history of alcohol abuse and those with no history of alcohol abuse. Excluded groups included those with transplants (solid organ and bone marrow), HIV and tuberculosis. The most common organism isolated was *Streptococcus pneumoniae* regardless of the group analysed. Disease was more extensive in the alcoholic group than in the other two groups, as assessed radiologically (multilobar or bilateral pneumonia). In addition, the group of patients who were previously alcohol abusers had a more extensive form of pneumonia than the non-alcoholics, but this was not as severe as in the alcoholic group. Other data obtained from this study show that the alcoholics had an increased requirement for admission to intensive care and for mechanical ventilation. The durations of ventilation and hospital stay were more prolonged than for the non-alcoholic group. The ex-alcoholic data show that they lay between the other two groups.

The second paper also originates in Spain and assesses the impact of antibiotic guideline adherence on the duration of mechanical ventilation for patients with CAP [2]. This multicentre prospective trial reviewed the data of all patients admitted to intensive care units and receiving mechanical ventilation over a 2-year period. Admission criteria were not standardised, and before entry the patients had to receive at least 24 hours of mechanical ventilation. The study group numbered 199 with an average age of 63 years. In 44% of patients the causative organism was *Strep. pneumoniae* followed by *Haemophilus influenzae* in 10%. For 60% of patients, antibiotic guidelines in accordance with those of the American Thoracic Society were followed. The third-generation cephalosporin and macrolide combination was followed for 56.7%. Patients with an underlying medical disorder were less likely to be treated in accordance with the guidelines. Failure to follow the prescribing guidelines resulted in an extra 3 days of mechanical ventilation in comparison with those who followed the guidelines, and the rate of ventilator-acquired pneumonia (VAP) was similar in the two groups.

Ventilator-acquired pneumonia, mechanical ventilation and outcome of chronic obstructive pulmonary disease

The prevalence of VAP remains high, with an appreciable mortality. Kollef and colleagues [3] performed a prospective observational study on 398 patients admitted to 20 intensive care units in North America to assess treatment patterns and outcome associated with de-escalation therapy. This involves initial broad-spectrum antibiotic administration followed by targeted therapy (de-escalation) based on microbiological cultures and sensivities. Major pathogens were identified in 49% of patients, most commonly methicillin-resistant *Staphylococcus aureus* (14.8%) and *Pseudomonas*

CAP = community-acquired pneumonia; VAP = ventilator-acquired pneumonia.

aeruginosa (14.3%). It is of interest that more than 100 different antibiotic regimens were prescribed as the initial therapy for VAP, with duration of therapy ranging between 1 and 51 days. There was no de-escalation of therapy in 61% of patients; de-escalation occurred only in those who had a major pathogen detected. It is noteworthy that mortality was lowest in the patients who had de-escalation of therapy (17%) compared with the 'no-change' group (23.7%).

There has always been an association between improved outcomes and increased case load. Kahn and colleagues [4] reviewed 20,241 patients who received mechanical ventilation across 37 hospitals in North America for the period 2002 to 2003. Not surprisingly, this study showed improved survival in those units with a large case load of patients undergoing mechanical ventilation (more than 400 patients per year) than in those with a small number (fewer than 150). This resulted in a 37% decrease in the adjusted odds of death. The reasons for this decrease are many but they include exposure to a greater number of cases; a broad range of best practice is in place and there is greater experience in the care of the critically ill patient. The authors in their discussion hint at regionalisation of intensive care resources perhaps being the way forward, but not for all and only for specialist intervention or care.

It is commonplace for patients with chronic obstructive airways disease (COAD) to be referred for intensive care management. Little is known of the long-term outcome of survivors after discharge from critical care. The September edition of *Critical Care Medicine* [5] published a review of the mortality and quality of life of survivors 6 years after admission to intensive care. A total of 742 patients were included, of whom 379 required mechanical ventilation. Of the group receiving mechanical ventilation, 36.7% died in hospital and 31.4% had died 6 years after discharge; 72% rated quality of life as worse than at admission.

Therapeutic hypothermia after cardiac arrest

Outcome from cardiac arrest remains poor. The use of therapeutic hypothermia for cerebral 'resuscitation' has been shown to have a survival benefit in out-of-hospital arrest due to ventricular fibrillation. Merchant and colleagues [6] performed a web-based survey of physicians in the USA, the UK and Finland. These physicians were not exclusive to critical care but included both cardiologists and emergency medicine. The survey was anonymous and questioned their use of hypothermia. Only 17% of surveys were completed (2,248). In total, 74% of USA responders stated they had never used hypothermia and 64% of non-USA responders had never used this treatment. The most common reason for non-use was the lack of available evidence for benefit from cooling after arrest. Those who did use hypothermia after arrest most commonly used cooling blankets (82%) or ice packs (58%). Invasive cooling with a vascular catheter and cold fluids was more likely to be used in non-USA areas. Cooling was instituted for both in-hospital and out-of-hospital arrest and for varying original arrest rhythms.

For practitioners who work in the UK, an interesting paper published in *Anaesthesia* [7] looked at the use of therapeutic hypothermia in the 256 intensive care units in the UK. A telephone survey obtained a response rate of 98.4% and, similarly to the results above, only 28.4% of units use cooling. Reasons cited for non-use were logistical and a lack of evidence for benefit from this therapy.

Outcome for elderly patients

The percentage of the population over 65 years of age is increasing and is predicted to increase further. This will undoubtedly have an effect on intensive care resources. Kaarlola and colleagues reviewed the admissions of those more than 65 years old to an intensive care unit in Finland and compared these with a group aged less than 65 years [8]. This cross-sectional study obtained 882 in the over-65 group and 1,827 under 65. Results indicated a shorter length of stay in intensive care for the elderly compared with the controls, most over-65 non-survivors dying within a month of discharge from intensive care (66%). This shorter length of stay was often associated with a decision to limit treatment. Unsurprisingly, mortality, at various time points, was higher among the elderly than in the controls. All elderly patients with a Sequential Organ Failure Assessment (SOFA) score of greater than 15 on admission died while on the intensive care unit. Of the over-65 survivors, 88% felt their quality of life was as good if not better than before admission, and 97% lived at home. No difference in mortality or outcome was found for either acute surgical or medical admission. It is important to note that the majority of the over-65 patients in this sample lived independently before their hospital admission and may therefore be a biased sample.

In a paper in *Intensive Care Medicine* from The Netherlands [9], short-term and long-term mortality of the very elderly (age greater than 80 years) was analysed as a retrospective cohort analysis. Of 578 patients, mortality for unplanned admission was 34% for a surgical problem and 37.7% for medical patients, in contrast with about 10% for a planned surgical admission. Post-discharge mortality was 26.5% and 29.7% compared with 4.4%, respectively. At 1 year after discharge, mortality was 62.1% for surgical patients, 69.2% for medical patients and 21.6% for planned surgical patients. In keeping with this theme, in the same journal a paper from France looked at quality of life and outcome in octogenarians referred for admission to intensive care [10]. Of 180 patients, 73.3% were refused admission on the basis of futility of care. Hospital mortality was 62.5% in those admitted to intensive care. Of those who survived to hospital discharge, quality of life and independence 1 year later were subjectively much worse.

Competing interests

The authors declare that they have no competing interests.

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