EDITORIAL

Non-invasive ventilation in elderly patients with acute exacerbations of COPD: bringing pressure to bear

Research letters only rarely stimulate an editorial, but the contribution by Balami et al. in this issue [1] is an important and worthy exception to the rule. In a small, workmanlike, superficially unexciting and unblinded observational study they have shown what several randomised controlled trials and meta-analyses dating back to 1997 had thus far failed to demonstrate (or examine): that elderly patients hospitalised with acute exacerbations of chronic obstructive pulmonary disease (AECOPD) and with persistent respiratory acidosis not only tolerate but also benefit from non-invasive ventilation (NIV).

COPD, and particularly hospital admission due to AECOPD, are problems of the elderly, the median age of admission in the UK being approximately 72 years. The guidelines on the management of COPD published by the National Institute of Clinical Excellence (NICE) last year [2] point to the very high level of evidence supporting the use of NIV in AECOPD patients with hypercapnic respiratory failure, and acute NIV services have been rapidly expanding across the UK and elsewhere in the last 5–10 years. NIV uses a full facial mask (or occasionally a nasal mask) to apply enhanced pressure ventilatory support from a flow generator, so unloading tired muscles. It can be used intermittently, thus enabling the patient to talk, and to drink and eat (nutrition being a vital aspect of medium-term recovery in this patient population). Patients rarely require sedation (with its attendant complications especially in the elderly) and thus can continue to take part in decisions regarding their care.

The evidence for the benefit of NIV comes from randomised controlled trials and meta-analyses (i.e. is generally level 1a evidence) and shows that in these patients NIV produces a 36–75% reduction in mortality, a 41–69% reduction in the need for intubation, a 44–82% reduction in the risk of complications, and a reduction in hospital stay of between 2 and 4.4 days. The number of patients who must be treated with NIV in order to prevent one death (number needed to treat, NNT) is estimated at 10 (very much lower than mortality-related NNTs for most other secondary care interventions), and the NNT to prevent one episode of intubation is estimated at four [3]. Yet all that the NICE guidelines are able to say about NIV in elderly patients is ‘although the mean age of patients in these studies was 60 years there is no reason to suppose that the benefits are not the same in older patients’. Whilst understandable given the lack of evidence in the elderly, this statement is hardly a ringing endorsement of the use of NIV in the population most at risk, those over 70 years. The situation had changed little at the time of publication of the latest Cochrane Review of the subject in July 2004 [3]. In practice this has led to the risk of elderly patients not being considered for NIV on the back of statements such as ‘he won’t tolerate it’, ‘there aren’t enough (NIV) machines available’, and that old (or at least ageing) chestnut ‘there’s no evidence base’. Balami et al. have shown that these statements simply ‘will not do’ and whilst to some extent the provision of NIV to all who require it is a resource issue the health economics of its use are also favourable, both in terms of effectiveness and of expense [4, 5].

Balami et al.’s study comprised 36 acidotic patients with a mean age of 77 years (10–15 years higher than that in studies to date and with an age range of 65–94 years), all but two of whom tolerated NIV. There were no complications from NIV. Mortality in treated patients was 25%, little different from that in similar studies of younger sufferers. There was (on clear ethical grounds) no control group, and (on accepted practical grounds) no blinding. Importantly the patients were treated in a high-dependency area of a medical admissions unit and not in the intensive care unit. This is consistent with the NICE guideline recommendations and emphasises that the most important aspect of NIV care is the provision of well-trained and experienced staff (chiefly nurses), and not expensive intensive care ‘beds’. The authors were careful to establish a ceiling of treatment (in all cases this excluded intubation in case of NIV failure).

Previous UK national audits of AECOPD admissions have demonstrated that mortality (both as inpatients and for up to 3 months after admission) increases dramatically with age, being as much as three times higher in the very elderly [6–8]. Age-related differences in treatment patterns are also well documented [6–8], but the possible relationship between such process deficiencies and age-related differences in outcome has not previously been examined. Provisional results from the Royal College of Physicians National AECOPD audit, conducted in the autumn of 2003, confirm that NIV is less likely to be offered to elderly acidotic patients than to their younger counterparts [9]. They do not,
however, provide any insight into the appropriateness or otherwise of these complex clinical decisions, or indeed whether this was due to a failure of NIV services to accept such patients or a failure of physicians and geriatricians to refer them. Furthermore, the possible relationship between this and other age-related process deficiencies revealed in this audit and the (persistent) differential mortality (again up to three times higher in the very old) is complex and remains the subject of ongoing analysis.

In simple terms, Balami et al.’s study tells us several things: that we should be considering and where appropriate pressing for NIV in our elderly acidotic patients hospitalised with AECOPD; that we should no longer be accepting that the evidence base is against us in our advocacy for these patients; that elderly patients generally tolerate NIV well; and that mortality, though high, is probably little or no worse than that in patients 10 years younger (in counter-intuitive contrast to age-related mortality for patients in general admitted for AECOPD).

On a slightly higher level it behoves geriatricians to support their respiratory colleagues in pressing for establishment or expansion of acute NIV services, to ensure that their juniors are trained in the implications and practicalities of NIV, and to organise their service provision, whether they run an integrated or an age-related service, so that NIV is an automatically available cross-road in the AECOPD patient’s pathway.

At a more philosophical level this apparently unassuming study goes some small way to answering the question ‘why do we need geriatricians?’. There are many and diverse answers to this one. However, Balami et al. have reminded us that: (i) clinical geriatricians even in the 21st century are needed as advocates for the development and expansion of appropriate services to our vulnerable patient population; (ii) we need academic geriatricians, at least in part, to ensure that aspects of diseases of the elderly are studied in elderly patients and not just in their younger surrogates. Ideally the elderly should be proportionately represented in large-scale studies designed and powered to provide definitive answers to important clinical questions. We can all, I am sure, quote examples where this has not been the case in the past (the treatment of lung cancer being the obvious example from the respiratory field). Failing this, academic geriatricians and (as in the present case) organ specialists should cooperate enthusiastically to fill in the gaps.

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