Acute non-invasive ventilation in older patients: medical evolution and improvement in survival of the un-fittest

In the current edition of ‘Age and Ageing’, Nava et al. have confirmed the clinical value of non-invasive ventilation (NIV) [1] in very elderly patients (mean age of 81 years) with chronic respiratory conditions [(largely but not exclusively chronic obstructive pulmonary disease (COPD)] with acute hypercapnic respiratory failure (Type 2 respiratory failure). In this randomised control trial, the primary endpoint was the achievement of criteria for endotracheal intubation. The secondary endpoints comprised mortality rate, arterial blood gases and respiratory rate. Only 7% (3 out of 41) patients from the NIV group met the criteria for intubation as against 63% (26 of 41) from the control group who received standard medical therapy. The odds for ratio for mortality in the NIV group was 0.4 (95% confidence intervals 0.19–0.83: \( P = 0.014 \), and subsequent analysis showed that this difference was preserved even in patients with ‘Do not incubate’ orders who received NIV as rescue therapy. The authors concluded that NIV should...
be offered as an alternative to patients who are considered poor candidates for intubation and to those with a ‘Do not incubate’ order.

As a randomised controlled trial in older patients with Type 2 respiratory failure, Nava’s study is an important extension of and contribution to the literature. NIV is already recognised to reduce mortality, need for intubations and complications in acute hypercapnic respiratory failure. It has been the subject of a previous editorial in this journal [2], which in turn was in response to an unblinded study demonstrating benefit of NIV in older patients (mean age of 77 years) with acute exacerbations of COPD with respiratory acidosis [3]. NIV is (and has been for some time) recommended treatment in international guidelines in the management of COPD [4, 5]. The guidelines have thus far had little evidence base for the use of NIV acutely in such patients beyond a (mean) age of 60 years or so. However, it is known that NIV can be delivered outside the high dependency unit or intensive care unit, provided the ward environment in which it is given is familiar with its use [6], and that, in the context of clinical trials, NIV needs to be given to only about 10 suitable patients in order to prevent one death [2].

Despite this, there is good evidence that NIV is less commonly used by geriatricians in the UK (as opposed to by general physicians or respiratory physicians), although no evidence of a direct age-related difference in its use [7]. This apparent inconsistency may of course reflect patient selection (in terms of differential referral to geriatricians versus, for example, respiratory physicians) but Nava’s study tells us that even patients and/or their families and/or their physicians who have opted for limitations upon their care in the sense of ‘Do not incubate’ orders are likely to benefit from NIV during episodes of Type 2 respiratory failure. Aside from differential referral however, as again pointed out by Nava et al. is the likely practice of therapeutic nihilism. This has been especially true in some chronic conditions such as COPD for which (as pointed out by Almagro et al. [8]) only recently have management guidelines identified mortality reduction as a priority. In this context Almagro demonstrates encouraging recent cohort evidence of improvement in long-term survival after hospitalisation for COPD with 3-year mortality in a 2003 cohort being 39%, as opposed to 47% in a 1996 cohort in the same hospital [8]. Subjects in this latter study had multiple co-morbidities and included those of advanced age and dependency. This improvement in long-term survival was probably in some part due to improvement in management of co-morbidities which are thought to be the direct cause of death in perhaps just over half of all patients with COPD [9]. Moreover, in a separate study, even after very intensive treatment for COPD exacerbations, including NIV and endotracheal intubation, nearly three-quarters of patients (mean age of only 66 years, but standard deviation of 10 years) considered their quality-of-life to be as good as or better than it had been in the stable period prior to their acute hospital admission, and nearly all would choose similar treatment again [10].

However, outside the context of clinical trials, the evidence is not all positive. A recent national audit by Roberts et al. [11] of nearly 10,000 representative COPD admissions showed that mortality in those with acidosis who received NIV was higher than in those with acidosis who did not receive NIV. This surprising and worrying finding is at least in part explicable by the use of a NIV as a ‘treatment of last resort’ (where it is less effective) and its inappropriate use in those with metabolic acidosis. As well as providing a challenge in terms of organisation of appropriate care ‘at the coalface’, the results of this study may help to further explain inappropriate therapeutic nihilism in this situation.

As we know, in the Western world, longevity has increased by 2 years for every 10 years of elapsed time over the last 180 or so years [12]. During the first two-thirds of this period, the vast majority of the increase was largely the result of the increase in survival in infants, children and young adults. However, in the last few decades the improvement in longevity has been largely due to an improvement in the lifespan of older people, in no small part due to an improvement in survival in a variety of acute clinical situations. If this trend is to continue our medical practice needs to continue to evolve. The process of Darwinian evolution is dependent upon multiple and successive individual genetic mutations. Most of these mutations are disadvantageous, a minority advantageous. In the judicious use of NIV in our older patients with acute hypercapnic respiratory failure, we have the chance to ‘choose a mutation’ in our medical practice that is advantageous to our patients in terms of adding years to life, and at the very least not disadvantageous in terms of adding life to years [10]. This may be a small step but …

The known is finite, the unknown infinite; intellectually we stand on an islet in the midst of an illimitable ocean of inexplicability. Our business in every generation is to reclaim a little more land, to add something to the extent and the solidity of our possessons.

(Thomas Henry Huxley 1887)

References

Embedding the Mental Capacity Act into clinical practice in England and Wales

The framework that clinicians used to make clinical decisions relating to the assessment of their patients’ mental capacity changed radically in 2005. Prior to that date decisions were based on a combination of experience, ethics and guidelines that were often discussed and sometimes challenged. Geriatricians awkwardly relied on the legal precedent of Re C (a schizophrenic man who refused amputation of a gangrenous limb) for case law guidance on the criteria of mental capacity [1]. When capacity was in doubt the discussions and challenges became more frequent, sometimes requiring the courts to decide outcomes. The introduction of Living Wills (first proposed in the USA in the late 1960s [2]) offered the promise for clinicians at least to know the wishes regarding treatment decisions of a patient without capacity who is currently ill. However, concerns about their legal standing and relevance in end-of-life care decisions remained controversial [3]. The Mental Capacity Act (MCA) for England and Wales [4] has for the first time, created a framework, acceptable to clinicians and carrying the force of law, that provides a solid foundation for clinical decision making when capacity is lacking or can be anticipated to be lost in the future. Some areas of clinical care such as mental health and social work incorporated the MCA into routine practice at an early stage.

But despite having been enacted 6 years ago, and despite a clear and well written Code of Practice, its adoption into many other specialties has been slower [5, 6]. In this issue, CJ Bond and K Lowton [7] describe the views of geriatricians when faced with a patient who has an advance decision to refuse treatments (ADRTs). Some of the geriatricians in the survey believed that their views might, in some circumstances, take precedence over a decision made in advance by a patient with capacity. What they may not have realised is that this may put them in breach of the MCA and risk court action.

The MCA sets out five statutory principles:

• A person must be assumed to have capacity unless it is established that they lack capacity.
• A person is not to be treated as unable to make a decision unless all practicable steps to help him to do so have been taken without success.
• A person is not to be treated as unable to make a decision merely because he makes an unwise decision.
• An act done, or decision made, under this Act for or on behalf of a person who lacks capacity must be done, or made, in his best interests.