Avoidance of endobronchial intubation

Measuring the depth of endotracheal tube insertion is simple and effective

BELMONTE/SPL

RESEARCH, p 1143

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Endotracheal intubation is commonly performed to secure the airway in a variety of clinical settings, including prehospital and emergency room settings; the intensive care unit; and, most commonly, the operating room. Endobronchial intubation as a complication of endotracheal intubation can cause atelectasis and hypoxaemia, as well as potential hyperinflation and barotrauma of the intubated lung. Although several methods are currently available to identify oesophageal intubation, only chest radiography and bronchoscopy can reliably detect endobronchial intubation, and effective bedside techniques to detect this complication are needed. In the linked prospective randomised trial Sitzwohl and colleagues describe a simple technique that can be used by any clinician performing endotracheal intubation to predict, and thus avoid, endobronchial intubation.[1]

Accidental endobronchial intubation occurs in about 5% of patients in intensive care, 28% of those with a cardiac arrest,[2 3] and 10% of out of hospital endotracheal intubations.[4] In the Australian Incident Monitoring Study, which assessed complications related to endotracheal intubation in 2000 adults, endobronchial intubation accounted for 42% of adverse events.[5] Unfortunately, the most reliable method of detecting endobronchial intubation is unknown. Most textbooks and recommendations suggest bilateral auscultation of the chest and observation of symmetric chest excursion[6]; however, both of these techniques are often unreliable even when performed by experienced clinicians. Several methods of detecting endobronchial intubation have been investigated, including the use of acoustic analysis of breath sounds,[7] ultrasound imaging of the lungs,[8] and measurement of airway length and airway pressure,[9 10] but these techniques are complex and cumbersome.

Another approach to positioning the endotracheal tube is to secure the tube at 21 cm and 23 cm at the incisors in women and men, respectively.[11] Sitzwohl and colleagues extend this approach by prospectively analysing the value of four different randomly assigned bedside tests to detect endobronchial intubation: chest auscultation, observation and palpation of chest excursion, measurement of the depth of endotracheal tube insertion, and a combination of all three tests. They investigated 160 patients who were assessed by inexperienced (first year anaesthetics residents) and experienced anaesthetists (more than two years of anaesthetics training). All of the clinicians were blinded to each intervention except for their assigned approach. The authors assessed the sensitivity and specificity of each of the four approaches and compared outcomes between experienced and inexperienced clinicians.

The study found that the depth of insertion and the combined approach were the most useful for predicting correct placement of the endotracheal tube. Sensitivity was greatest for the combined assessment, but depth alone was almost as good. The patient's sex did not affect the results. Not surprisingly, more experienced anaesthetists more often correctly identified proper positioning of the tube, although interestingly this was mostly explained by better auscultation scores, rather than the depth of insertion. In the group of men with a tube placed in an endobronchial position, the mean distance measured at the incisors was 27 cm, a depth that almost all anaesthetists would predict as endobronchial. How this observation would affect their findings is unclear, as is the applicability of their findings to non-anaesthetists. However, the study clearly shows the superiority of depth of tube insertion over standard auscultation in determining proper positioning of the endotracheal tube.

The study has important and practical findings for proper positioning of the endotracheal tube and the avoidance of potentially dangerous endobronchial intubation. Firstly, compared with the authors' 20 cm and 22 cm suggested insertion depths for women and men, where the recommended safe margin of distance from the tip of the endotracheal tube to the carina would be 2.5 cm, using the previously recommended distances of 21 cm and 23 cm would have reduced this safety margin in almost 20% of subjects. Their findings, albeit in a relatively small group of patients, would thus ensure correct positioning in all patients when an insertion depth of 20 cm for women and 22 cm for men is used. Secondly, this approach is a simple, easily applied technique, which is applicable not only in a quiet operating room but also in a noisy emergency room or prehospital emergency setting, where auscultation is unlikely to be an accurate method. The technique would also be useful in developing countries, where chest radiography and fibreoptic confirmation may not be available. Finally, their technique seems to be especially useful for clinicians less experienced in airway management, such as emergency medical personnel.

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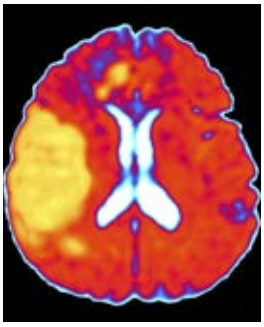
Intravenous thrombolysis for stroke

Elderly patients should not be excluded solely on the basis of age



SOVEREIGN, ISM/SPL

RESEARCH, p 1144

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Intravenous thrombolytic treatment for acute ischaemic stroke is controversial in patients over 80 years, mainly because they have been excluded from or under-represented in the large scale randomised controlled trials of such treatment.[1-3] In the linked study, Mishra and colleagues assess the influence of age on the response to thrombolysis (alteplase) in people with acute ischaemic stroke.[4]

Contrary to the recommendations and conditions for use in North America, the European Medicines Agency (EMEA) does not approve intravenous thrombolysis with recombinant tissue plasminogen activator in patients over 80 years with acute ischaemic stroke. This has important consequences: as the proportion of elderly people is rising in developed countries, 20-30% of patients with acute ischaemic stroke may be excluded from receiving the only curative emergency treatment available.[5-7] In practice, the exclusion of patients on the grounds of age alone, along with poor public awareness of the stroke warning signs, excessive delay in the admission of patients with stroke, and insufficient coverage by stroke units, may contribute to the low rate of stroke thrombolysis (only 2% of all patients with stroke).[8]

The main reason for excluding elderly people from thrombolysis is the fear of an increased risk of developing symptomatic treatment related intracerebral haemorrhage. However, observational studies suggest that recombinant tissue plasminogen activator given within three hours of the onset of stroke is safe and potentially effective in patients over 80.[9-12]

Mishra and colleagues present an adjusted controlled comparison of outcomes between non-randomised patients with acute ischaemic stroke who received intravenous recombinant tissue plasminogen activator or no thrombolysis to assess influence of age on functional outcomes.[4] The data on patients who received thrombolysis were extracted from the SITS-ISTR (Safe Implementation of Treatment in Stroke-International Stroke Thrombolysis Register), an internet based international registry of stroke thrombolysis, whereas the control group comprised patients who did not receive thrombolysis but received placebo or a neuroprotective agent in neuroprotection trials held within the Virtual International Stroke Trials Archive (VISTA). Of the 29 228 patients available for analysis, 3439 were over 80 years old (mean age 84.6).

The study is the largest series of elderly patients treated in routine clinical practice with intravenous recombinant tissue plasminogen activator. Median baseline stroke severity was equal for thrombolysed patients and controls (median National Institute of Health stroke scale score 12). The analysis found that functional outcomes on day 90 (measured by modified Rankin scale scores) were significantly better in patients who received thrombolysis than in those who did not. The association occurred independently in patients aged up to 80 years (odds ratio 1.6, 95% confidence interval 1.5 to 1.7) and in those over 80 years (1.4, 1.3 to 1.6). The results appear quite robust; the odds ratios were consistent across all 10 year age ranges. The number needed to treat for one more elderly patient to achieve a favourable outcome (no disability or slight disability in which the patient can look after himself or herself without help) at three months was 8.2 compared with 8.5 for their younger counterparts. Safety data on the risk of symptomatic treatment related intracranial haemorrhage were reassuring in the elderly population—symptomatic intracerebral haemorrhage rates were no different or just slightly increased in patients over 80 compared with those below 80 depending on the definitions used. Overall, the odds ratio for mortality was 0.89 (0.76 to 1.04) in the elderly population receiving recombinant tissue plasminogen activator.

Limitations of this study are largely related to its design. As a post hoc analysis of a thrombolysis registry, the study is prone to selection bias. If the elderly patients with stroke included in this registry were more carefully selected for administration of intravenous recombinant tissue plasminogen activator, the findings would be less generalisable to all elderly patients. As acknowledged by Mishra and colleagues, treatment allocation in their study was not randomised and ongoing randomised controlled thrombolytic trials that include patients aged over 80 years should yield more robust conclusions.

Meanwhile, on the basis of current evidence about the safety and efficacy of intravenous thrombolytic treatment, age alone should not be a barrier to stroke thrombolysis. Elderly patients may be especially vulnerable to subjective judgments of the benefit of optimal stroke care, particularly when medical resources are limited. Quality improvement strategies are needed to ensure that elderly people, who have the highest risk of stroke, have equal access to effective treatment.

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Is early retirement good for your health?

Yes, regarding fatigue and depressive symptoms, but chronic disease is unaffected

RESEARCH, p 1145

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Life expectancy is increasing steadily in developed countries. The gap between the common retirement age at 65 and life expectancy at that age has increased substantially; for example, in the Netherlands from 6.4 to 13.3 years in the past 50 years. Governments are seeking to increase the proportion of elderly people in paid employment to balance the ratio of employed people over dependent ones.[1] Modern welfare states have created financial incentives to support employment at older age and are pushing the age of statutory retirement upwards. Extending working life is an important societal challenge. There is considerable debate about the timing of retirement and its influence on health: is retirement good or bad for your health? In the linked cohort study, Westerlund and colleagues assess the association between retirement and the subsequent risk of incident chronic diseases, depressive symptoms, and fatigue.[2]

Several studies have shown that retirement at younger age has adverse effects on health. A prospective study in a petrochemical company showed that workers who retired at age 55 had a 37% higher mortality than those who retired at 65.[3] A similar result was seen in Swedish construction workers, but detailed analyses showed that increased mortality did not depend on early retirement but on poor health before early retirement.[4] The methodological problem of health related selection into retirement may obscure the effect of retirement on health. It is therefore difficult to disentangle the effects of ill health on displacement from the labour market through disability benefits, early retirement, or unemployment from the influence of these different mechanisms of withdrawal from the workforce on health.[5]

Westerlund and colleagues' study of employees of the French national gas and electricity company is unique in that annual health measurements were carried out several years before and after retirement. They were therefore able to analyse the influence of retirement on the secular trend in health. The prevalence of mental and physical fatigue decreased greatly one year after retirement compared with one year before retirement (odds ratio 0.19, 95% confidence interval 0.18 to 0.21 and 0.27, 0.26 to 0.30), and this effect was even more pronounced in workers with a chronic disease. They also found a decrease (although less marked) in depressive symptoms (0.60, 0.53 to 0.67).[1] These results corroborate earlier findings in the same cohort that the prevalence of less than good self rated health decreased substantially over the time period of retirement. In addition, the gradual increase in the prevalence of suboptimal health before retirement slowed down after retirement.[6] In short, retirement may come as a relief to workers.

The results need careful consideration. The health benefits of early retirement were related to a reduction in fatigue and depressive symptoms but had no effect on major chronic diseases. Work related fatigue is common in the workforce. In the European survey on working conditions in 2005, about 23% of all workers reported fatigue as a health problem related to work.[7] Fatigue is often a short term effect that requires time for recuperation, but it may become chronic when the period needed for recovery

DIOMEDIA/ALAMY

Modern welfare states are increasing the age of statutory retirement

is longer than the time off work. The need for recovery increases with age up to 55 years but decreases in workers in the highest age groups.[8] Possible explanations for this are the healthy survivor effect and older workers having less strenuous working conditions, especially less physically demanding tasks; more control over planning and pacing of activities; and a better work-life balance. Most participants in Westerlund and colleagues' study retired at age 55 (a common occurrence in France), as a result of the company's generous retirement policy. Research is needed to corroborate these findings in other countries with a substantially higher age of retirement.

In several countries many workers who retire from long service jobs now seek paid employment in bridge jobs before completely leaving the labour force. Bridge jobs are typically part time or of short duration after a long working career, and they are aimed at seeking a second career or simply staying actively involved at work. Such jobs may be taken because of economic pressure but also because of the need to preserve and maintain existing internal and external structures in a fulfilling life.[9] The Health and Retirement Study in the United States showed that bridge employment was taken up by people with better mental health and less functional limitations, and that mental health was better in retirees who pursued a second working career.[9] These findings seem to contradict Westerlund and colleagues' observations. It is too early to make definite claims about positive and negative benefits from retirement at a particular age. A recent study in Germany showed a complex pattern, whereby early retirement seemed a necessity for workers with health problems and was an asset for healthy workers who voluntarily retired.[10]

The results of Westerlund and colleagues' study highlight the need for longitudinal studies with repeated measurements in the ageing workforce. To help elderly workers maintain good health, efforts are needed to improve working conditions; adapt job activities to the capabilities of ageing workers, especially those with chronic diseases; and adopt primary preventive interventions that will improve the health and health behaviour of workers. Health professionals need to appreciate the importance of health on paid employment and the role of healthcare in supporting workers to continue their work in good health.

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Alcohol and heart disease

Regular consumption is less damaging than binge drinking

RESEARCH, p 1146

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The health benefits of consuming alcohol are well known, but occasionally the cardioprotective benefits of drinking are challenged.[1] In the linked study, Ruidavets and colleagues compare groups of middle aged men in France and Northern Ireland, who have very different drinking cultures and rates of heart disease.[2] The authors found that men who "binge" drink (drink ≥50 g of alcohol once a week) had nearly twice the risk of myocardial infarction or death from coronary disease compared with regular drinkers over 10 years of follow-up.

Those with a "glass half full" perspective might try to find a different spin on this paper. The authors also found that French men who were regular heavy drinkers, even those who drank on average more than 75 g of alcohol a day (just over a bottle of wine), had a similar risk of heart disease to those who drank 1-24 g a day. This doesn't just apply to the French. In a recent meta-analysis that combined Danish and Australian drinkers, the risk of heart disease was reduced at any reported level of alcohol, even up to 500 g a week (about seven bottles of wine), as long as it was consumed over two or more days a week.[3] So perhaps the take home message in terms of cardiac disease is that regular (very) heavy consumption is fine, but irregular heavy drinking is not.

The French seem to take this message quite literally. Among the cohort in Ruidavets and colleagues' paper, alcohol was drunk regularly by 90% of the men, and 33% of those without a history of heart disease at baseline were drinking an average of 50 g or more a day. Contrast this with advice from the UK Department of Health for women not to drink more than two to three units (16-24 g), and men no more than three to four units (24-32 g) on any day.[4]

Are there plausible biological mechanisms that could explain how different drinking patterns affect risk? Irregular drinking may lead to histological changes in the myocardial conducting system and to a reduction in the threshold for arrhythmia, in particular ventricular fibrillation.[5] Favourable changes in high density lipoproteins described for regular alcohol drinkers do not affect binge drinkers to the same extent; however, they do show adverse changes in low density lipoproteins. These factors may, in part, explain the higher risk of heart disease in irregular heavy drinkers.

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ROGER HUTCHINGS/ALAMY

French men tend to be regular drinkers rather than binge drinkers

Could the explanation be the result of confounding? In this paper, the authors adjust for many classic cardiovascular risk factors, but not diet, which may be an important omission. In the absence of large well conducted randomised controlled trials, residual confounding cannot be ruled out. The authors discuss types of drinks, but this is so intricately linked with patterns and behaviours surrounding drinking that it is hard to extract evidence. For example, the favourable profile of wine is often typified by drinking it slowly while socialising over dinner. In contrast, the less favourable profile of beer and spirits conjures up images of binge drinking pints of lager followed by shots of spirits in the local pub. It is not hard to imagine that factors other than the type of alcohol or drinking pattern are important in the relation between alcohol and heart disease.

So how does this inform public health? Clearly, the increased risk of heart disease associated with binge drinking is just one of many detrimental outcomes; not just to the individual's health but also to society. Young people are unlikely to take much notice of the findings about patterns of alcohol consumption and risk of heart disease, at a time when their risk of heart disease is low. They are more likely to respond to anti-binge drinking messages that focus on the risk of alcohol poisoning, injuries, assaults, and regretful risky sexual encounters. People don't tend to drink for the health benefits to their hearts, but it may be used to justify or excuse their heavy drinking habit. Middle aged men should be made aware that if they are irregular heavy drinkers, the possible cardioprotective properties of alcohol consumption may not apply to them, and, in contrast, they may be putting themselves at increased risk of having a heart attack. Furthermore, all heavy drinkers, regardless of pattern of consumption, should be reminded that they are increasing their risk of many other diseases, such as cirrhosis of the liver, chronic pancreatitis, and several kinds of cancer.

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The extension of personal budgets in social care and health

The personal budget model will be rolled out but the evidence base is contested

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The government has now published its consultation paper on adult social care,[1] with a proposed framework for an outcomes based approach to assessing progress.[2] A key component of the documents is a commitment to extending the number of people using personal budgets to purchase their care. The proportion of people using community based services who have a personal budget increased from 6.5% in 2008-9 to 13% in 2009-10, and the government wants to make this the norm by 2013 for everyone receiving care and support.

A personal budget can be taken as a direct (cash) payment, as an account held and managed by the local authority in line with the person's wishes, or as an account placed with a third party provider and used when needed rather than according to a pre-set plan. It is the cash payment option that the government wants to see developed. The model has been used most successfully by adults with physical disabilities. Drawing on reports of successful implementation,[3-5] the government identifies five other groups for whom it thinks the model could work given the right sort of support—older people; people with learning disabilities, autism, and complex needs; people with mental health conditions; those living in residential care; and people who lack the mental capacity to make some decisions.

This is a challenging agenda, but one that ties in with other strands of health and social care policy and practice, such as self care, the "expert patient," the "expert carer," and the "no decision about me without me" zeitgeist of the NHS white paper.[6] Until now the personal budgets agenda has been confined to social care, and although with some relevance for clinical practice, it has been easy to regard it as unlikely to touch patients and health practitioners. However, the growing interest in, and political commitment to, personal health budgets, makes the topic more pertinent for clinicians in all sectors of the NHS.

The NHS white paper stated that one of the roles of the new NHS Commissioning Board would be "promoting personalisation and extending patient choice of what, where, and who, including personal health budgets." The consultation on adult social care reaffirms this commitment and

goes further, stating that the government will "use the pilots currently under way to inform the rollout of personal health budgets and make it possible to combine personal health budgets with personal budgets in social care in the future."

The personal health budget initiative arises from an invitation from the Department of Health in 2009 to primary care trusts and their local partners to take part in a pilot programme.[7] Interest seemed to be high—70 sites were chosen, of which 20 were selected to be in depth evaluation sites. The model was felt to be particularly suitable for certain groups of patients—those eligible for NHS Continuing Healthcare, mental healthcare, or end of life services and those with chronic conditions. Many of these people may also be receiving a personal budget for their care and support needs, hence the interest in combining the social care and health components.

The evaluation of the personal health budget pilots has yet to be concluded—the consultation notes that "the independent evaluation, to be published in 2012 will inform the wider rollout of personal health budgets." However, a short interim report from the evaluation team was published earlier this year and identified some of factors shaping early developments.[8] These include resource implications and making process adjustments, but (as in the case of social care) the key concern is cultural. This is not just a matter of clinicians being unfamiliar with the concept of genuinely engaging patients in the care planning process, but patients themselves being inured to the "doctor knows best" culture. A recent report suggested that several of the selected pilot sites have yet to recruit any patients, and this is indicative of the cultural difficulties.[9]

If social care progresses towards full personal budget coverage by 2013, and the personal health budget evaluation does find evidence of effective practice, then further developments are likely between 2013 and 2015. There is also the question of how any such developments might relate to the integrated care pathways to be developed by the National Institute for Health and Clinical Excellence (NICE). The forthcoming health bill will propose legislation to enact the expansion of NICE to adult social care, enabling it to develop quality standards covering the whole pathway between NHS and social care services. This will require closer integration of professional and organisational boundaries, especially if patients have the option to take a combined personal budget and personal health budget.

Although the government seems (wrongly) to be opting for separate outcomes frameworks across the NHS, public health, and social care, there is no doubting the commonality of much of these frameworks. In the case of adult social care and the NHS, personalisation will be central to both. Emergent general practitioner consortiums will need to be aware of all of this and take the opportunity via the proposed health and wellbeing boards to work constructively with their local authority partners.

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