[Editorial] Does frailty predict post stroke mortality?


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Clinical Frailty independently predicts early mortality after ischaemic stroke

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Introduction
Stroke care is continually improving. Improvements in primary prevention, rapid diagnosis and treatment have been associated with national reductions in stroke mortality.[1] Increasing availability of intravenous thrombolysis and mechanical thrombectomy has brought the discussion back to one of the most fundamental management questions in Geriatrics: “Is this the right decision for this particular patient?”

The understanding of frailty as a syndrome of reduced physiological reserve has been widely adopted.[2] Research across many specialities has identified frailty as an influencing factor in mortality and functional recovery, notably with: emergency surgery [3], intensive care admission [4] and mechanical thrombectomy in acute stroke[5]. The exact mechanisms through which frailty influences these outcomes is under investigation, though it has been suggested that it may be the result of cumulative deficits over time prior to the event rather than the response to the event itself. [6]

Ischaemic stroke, frailty and mortality

In this issue, Evans et al demonstrated through a single site cohort study (n = 433) that frailty, measured using the Clinical Frailty Score (CFS)[2] is independently associated with 28-day mortality. It was also identified that a one point increase of admission CFS attenuated the post-thrombolysis National Institute of Health Stroke Scale (NIHSS) improvement by 1.07 points. These data suggest that pre-admission frailty has a significant influence on functional recovery post-stroke and can help the clinician decide the management plan.

The authors should be commended for continuing the trend of integrating real-world, readily available data into analyses, for which data is in abundance due to mandatory data collection for the National Sentinel Stroke National Audit Programme (SSNAP). It would have been useful to compare this cohort against a non-hyperacute stroke centre to identify unmeasured elements of pre and intra-hospital care which may have influenced this relationship. Other variables which may possibly influence this are: time of presentation, time to arrive at hospital and transfer to another centre for thrombectomy. The effect of clinical frailty on early diagnosis is also an important factor to be considered.
The relationship between pre-stroke function and post-stroke recovery is well known. [7] However, rapidly collating this information and integrating it into decision making during a time-sensitive thrombolysis assessment is challenging. The use of the CFS will help ameliorate this challenge.

The difficult decision facing clinicians regarding indication for thrombolysis has been well described. It is clear that frailty, including pre-existing disability can influence mortality and morbidity post-stroke and post-thrombolysis [8]. This demonstrates the need for a personalised approach to treatment decisions, for which the structure is already a central facet of comprehensive geriatric assessment, albeit in a less time-pressured situation. [9]

**The challenge of assessing frailty**

The authors have stated that there was no statistically significant difference between CFS and pre-morbid Rankin scale. This highlights an already well-known problem within stroke trial methodology: what scale should we use and when? [10] Scales such as the NIHSS are useful in the hyperacute setting due to their highly validated ability to aid diagnosis and guide thrombolysis, yet, it’s utility in measuring longer-term recovery is not clear. The same question arises with the measurement of functional assessment as it covers many domains of cognition and physical function. There is ongoing debate surrounding the classification of ‘frailty’ based on scoring systems and the use of dichotomous variables in clinical research as they can lead to a reduction in statistical power[11], as in this study where non-frail was classified as CFS ≤ 4, frail: CFS 5-8.

Acute ischaemic stroke requires a rapid assessment of frailty, which is validated to be able to inform discussions with the patient regarding outcome and to decide on the most appropriate treatment. Further research should investigate if a ‘personalised functional assessment’ using the clinical classification of stroke and the pre-stroke CFS could help better predict the outcome. We probably need a specific scale for frailty in stroke.

**Which treatment option is appropriate?**

A future area of research would be clinical trials to identify if mechanical thrombectomy is safer than thrombolysis in eligible frail older patients. It has been shown that
mechanical thrombectomy has been successful in nonagenarians [5] with encouraging functional recovery but future trials must include a more representative patient population. With cumulative impairments in drug pharmacokinetics and vascular structure associated with frailty, the question should be posed if the risks of thrombectomy would be less, with more favourable results than the risks of intravenous thrombolysis in eligible patient cohorts. The use of frailty scores in these trials would be key to providing evidence to support further funding for the development of thrombectomy services and for workforce planning to develop the service, similar to that of the Primary Coronary Intervention (PCI) hub network for the management of acute myocardial infarction.

Conclusion

This publication adds to a growing body of discussion that frailty significantly influences outcome and mortality in acute ischaemic stroke. The paper has identified that despite being disease-naïve, the CFS is a useful and easily utilised tool in assessing frailty during an acute stroke assessment. Integrating the measurement of frailty into decision making will inform discussion on treatment option eligibility. With an ageing population and an increasing stroke incidence in this cohort, more clinical trials are needed to help guide treatment in the frail elderly.

References:

