Primary percutaneous coronary intervention in the very elderly: a realistic intervention?

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Worldwide, primary percutaneous coronary intervention (PPCI) continues to be the gold standard treatment of choice for patients presenting with ST elevation myocardial infarction (STEMI) assuming PCI can be done within two hours.[1-3] However, older patients were under-represented and commonly excluded in the landmark clinical trials.[4-6] Although several smaller studies have been undertaken in the past,[7] a high level of evidence, specifically with regards to established consensus on STEMI and revascularisation benefits in elderly populations, remains sparse. The TRIANA trial, along with pooled analysis of two previous reperfusion trials, concluded that primary PCI did demonstrate better results in terms of death, re-infarction, or stroke at 30 days in older patients as compared to fibrinolysis.[8] However, the utility of PPCI in patients aged ≥75 years with STEMI is debated, and this population receives fewer reperfusion treatments, both invasive and pharmacological.1 The lower reperfusion rates for elderly patients may relate to decision making based on the presence of atypical symptoms, delays in diagnosis, to their frequent comorbidity and to the higher rate of complications they may present.[1,9,10]

In this issue, Robb et al. present a single centre, retrospective study investigating the outcomes for patients in West Scotland over the age of 85 who were accepted for a PPCI after being diagnosed with a STEMI.[11] They rightly point out that the ageing population will lead to rapid growth in this cohort presenting for PPCI. The framework used to define elderly as ≥85 years is not explicit in this study and it is worth noting that the definition of elderly varies in previous studies, and currently there is no apparent consensus as to who should be considered 'elderly'. Historically, age 65 and over was considered elderly in PPCI trials.[12] The currently ongoing SENIOR-RITA trial (a multicentre, prospective, open-label trial, randomising patients presenting with type 1 non-ST elevation myocardial infarction [NSTEMI] between invasive and conservative treatment strategies) uses an age cut off of ≥75 years.

In the described cohort, Robb et al. conclude that advancing age and renal dysfunction were associated with poorer outcomes. Receiving an angiogram +/-PCI led to a median survival of 2.55 years and a 33.5% mortality rate per year. Unsurprisingly, the survival of octogenarians was greater than nonagenarians. This has been compared to a median survival of 5.6 years for males and 6.4 years for females and a mortality rate of 15.9% per year in the general population >85 years old. Whilst this is an important observation, ideally one would make comparison with the survival and mortality rate of over 85-year-olds with STEMI who received fibrinolysis or conservative management only for their STEMI. This cohort would doubtless be confounded by associated morbidity and would have included those patients that were accepted for PPCI and did not receive an angiogram, those referred for a PPCI but did not get accepted by the tertiary hospital, or perhaps those patients that were not referred in the first place as they were too unwell.

Of the 172 patients in this study that were initially screened following acceptance for PPCI in the study group, eight did not have an angiogram for various reasons. Seventeen patients had normal coronary angiograms and four were too haemodynamically unstable to proceed to PCI. The primary outcomes of death during procedure, at 30 days and one year, as well as readmissions were evaluated only for the 164 patients undergoing invasive coronary angiography. It is possible that the exclusion of those who did not proceed to PPCI could distort the overall results and conclusions.

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We know that older patients will have poorer outcomes following STEMI treated by primary PCI than their younger counterparts.[13] However, these findings should not necessarily discourage using primary PCI in this population. Robb et al. emphasise this by presenting the comparative data for the most deprived patient groups (regardless of age) who have similarly poor outcomes after primary PCI and for whom there is no suggestion PPCI is inappropriate.[14] Outcomes without revascularisation are likely to be even worse in these patients who are likely at the highest absolute risk. In addition, the authors attempt to include an assessment of frailty alongside chronological age in this cohort which should be commended. Frailty as assessed by limited mobility was associated with worse outcomes (one-year mortality had a p value of 0.008). It is known that frailty is a strong predictor of mortality in ACS after adjusting for prognostic factors including age. Likewise, frailty added significant prognostic information over the Global Registry of Acute Coronary Events (GRACE) score in this group of patients.[15] This data is a reminder that age alone should not be used as a gatekeeper for invasive treatments. However, for practical reasons a comprehensive functional assessment of frailty at time of STEMI may not be possible. In addition, we need more data to inform our decision making in the frailest groups and recognition that poorer outcomes should not necessarily preclude intervention (which may indeed have an increased absolute benefit). As clinicians increasingly consider treatment escalation plans and emergency healthcare plans for frail patients, should there be a discussion about whether patients would benefit from a PPCI in an emergency situation on an individual basis?

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