Primary percutaneous coronary intervention in octogenarians: navigate with caution

George D Dangas and Harsimran S Singh

*Heart* 2010 96: 813-814
doi: 10.1136/hrt.2009.191916

Updated information and services can be found at:
http://heart.bmj.com/content/96/11/813.full.html

These include:

**References**
This article cites 10 articles, 8 of which can be accessed free at:
http://heart.bmj.com/content/96/11/813.full.html#ref-list-1

**Email alerting service**
Receive free email alerts when new articles cite this article. Sign up in the box at the top right corner of the online article.

**Notes**

To order reprints of this article go to:
http://heart.bmj.com/cgi/reprintform

To subscribe to *Heart* go to:
http://heart.bmj.com/subscriptions
Primary percutaneous coronary intervention in octogenarians: navigate with caution

George D Dangas, Harsimran S Singh

As the population continues to age, physicians often need to make crucial clinical decisions in the medical management of octogenarians and beyond. As the majority of clinical studies focus on younger demographics, we are often forced to extrapolate the existing evidence and guidelines while treating the very elderly. In the context of coronary heart disease, primarily a disease of ‘old age’, the clinical burden of such decisions is a daily occurrence with often life-altering consequences.

In the acute management of ST-elevation myocardial infarctions (STEMI), the weight of evidence has proved primary revascularisation therapies to result in decreased mortality and morbidity compared with medical management without mechanical reperfusion. Furthermore, timely percutaneous coronary intervention (PCI) is now established as a superior strategy compared with fibrinolytic therapy, with regard to both survival and composite outcome measures. Nevertheless, there has remained significant controversy in treating the elderly, given the observed risk of complications with increasing age and the paucity of trials proving the benefits of revascularisation and PCI to the octogenarian cohort.

In this issue of Heart, Claessen et al publish their 10-year single-centre experience in performing primary PCI in patients presenting with acute STEMI, comparing those aged 80 years and over with younger subgroups (see page 843). The investigators note an increasing proportion of octogenarians treated with primary PCI from 1997 (3.5%) to 2007 (8.8%). This trend is consistent with other published experiences and may reflect an ageing populace, a later age at presentation and an increasing comfort in performing primary PCI in higher-risk groups such as octogenarians as a result of improved technique and equipment. From this study cohort, outcomes of 30-day and 1-year mortality are compared between the 379 patients aged 80 years and over (8.4% of the total cohort) and subgroups of younger patients. The investigators find age to be a significant predictor of both short and long-term mortality (28% 1-year mortality in octogenarians vs 9% in individuals <80 years).

Their study outlines an important ‘real world’ experience for primary PCI in octogenarians. These 379 patients represent one of the larger cross-sections published in this age group. Its principle conclusion that age is a prognostic risk factor after STEMI is in keeping with both clinical logic and earlier clinical trials, such as GISSI-2 and CUSTO-I. However, given the lack of a randomly selected comparison group, the study is unable to delineate the optimal treatment strategy for octogenarians, and we should refrain from considering the 28% rate as ‘too high’ or prohibitive. In the past, sentinel randomised control trials that established primary PCI as superior to fibrinolysis, such as PAMI-I and DANAMI-II, reported subgroup analyses of their elderly (defined as ≥65 or ≥70 years, respectively). While we must exercise restraint when examining subgroups, both trials found improved composite outcomes, including lower rates of mortality and myocardial infarction (MI), with primary PCI compared with fibrinolysis in the oldest study participants.

Why the elderly fare worse than their younger counterparts with MI reperfusion therapies is a multifaceted question. In part, almost any therapy tested in octogenarians would be expected to have a more attenuated benefit than in younger patients. Even the diagnosis of acute coronary syndromes can be particularly challenging in the elderly. Older patients often present later to the emergency department compared with their younger counterparts. Their presenting symptoms may be atypical (ie, absence of chest pain, mild heart failure symptoms alone, or primarily malaise) and they may have pre-existing dementia or acute delirium that decrease the usefulness of history in determining the diagnosis. ECG changes are more often equivocal in the elderly, such as with a pre-existing bundle branch block or residual ST-elevations from previous infarcts—all of which make ECG interpretation challenging. Also, given the gender differential that exists worldwide in life expectancy, it is no surprise that the majority of octogenarians presenting with acute STEMI are women. This gender bias, the opposite of what is seen in younger populations, may further contribute to the increased predilection of atypical symptoms. All of these factors can increase the time between the onset of symptoms and primary PCI therapy, thus adversely affecting outcomes.

In addition, it is no surprise that octogenarians are more likely to have coexisting acute and chronic medical problems. An increased prevalence of significant peripheral vascular disease augments the risk of vascular complications during PCI. A larger number of elderly with diabetes or multivessel coronary heart disease contribute to both procedural complexity and overall prognosis. In the typical rush for optimising door-to-balloon time, patients with potential STEMI may be triaged to the catheterisation laboratory, often before the results of important laboratory findings have been processed. Metabolic abnormalities, such as renal insufficiency, electrolyte disturbances, or significant anaemia, may not be realised until later, although these comorbid conditions may significantly affect the overall management and outcome. For instance, the development of acute renal insufficiency after an iodinated contrast procedure has been associated with early and late adverse events, and its impact is increased by coexisting anaemia and acute haemodynamic disturbances such as those occurring in an acute MI.

In the current study, an important confounding variable noted by the authors is the presence of shock complicating acute STEMI. A higher percentage of the octogenarians presented with shock (12%) compared with those aged less than 80 year (8%). Indeed, shock is the strongest predictor of unadjusted 1-year mortality, with an odds ratio of 9.37. For years, we have recognised cardiogenic shock in the setting of acute STEMI to portend a dismal prognosis in all comers, with the SHOCK trial reporting
Claessen et al may thus bias the results published by the octogenarian subgroup. If we extrapolate the mortality rate in the SHOCK trial and apply it to the 80 years and older cohort of the study, excluding shock patients, would fall to 19%, which is still high, although less alarming than the 28% highlighted in their paper.

Even with the current state of evidence, it is reasonable and appropriate to pursue a strategy for primary PCI in octogenarians with acute STEMI. As always, clinical decisions should be made on a case-by-case basis, and especially with the elderly, we must maintain heightened vigilance. Patients with cardiogenic shock do represent a challenging clinical subset in all age groups, but this clinical scenario is both more prevalent and severe in the elderly. However, short of clear and convincing evidence to the contrary, we should not unilaterally deny morbidity and mortality-altering therapies, such as primary PCI in STEMI, to our octogenarians. Finally, we should be cautious with acute MI cardiogenic shock and have a more rounded approach to these patients before proceeding with immediate PCI. The SHOCK trial indicated that medical stabilisation, including the possibility of intra-aortic balloon counterpulsation support, may be a wise initial approach for the elderly. This can be especially practical if we lack critical laboratory values at the time of immediate diagnostic angiography and several comorbidities are suspected.

Competing interests GDD has received previous modest speaker honoraria (from Cordis, Boston Scientific, Medtronic and Abbott Vascular). HSS has no interests to declare.

Provenance and peer review Commissioned; not externally peer reviewed.

Heart 2010;96:813–814. doi:10.1136/hrt.2009.191916

REFERENCES