

Primary percutaneous coronary intervention in nonagenarian patients

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Background: Given the continuous increase in life expectancy, elderly patients with ST segment elevation myocardial infarction (STEMI) are becoming a growing proportion of those referred for primary percutaneous coronary intervention (pPCI). However, this population is usually excluded from randomized trials and limited data are available to guide clinical decisions. The aim of this study-level meta-analysis was to describe and analyze the determinants of outcomes in this population.

Methods: We searched the literature for studies reporting ischemic and hemorrhagic outcomes and/or mortality in nonagenarian patients undergoing pPCI. An analysis of the heterogeneity between studies in outcome reports was performed with I² test. A univariate meta-regression analysis was conducted to explore the relationship between outcomes of interest and classic cardiovascular risk factors, gender, previous myocardial infarction (MI), MI location, PCI characteristics, hemodynamic instability, vascular access, intra-aortic balloon pump (IABP) and Glycoprotein IIb/IIIa inhibitor (GPI) use.

Results: Overall, 15 observational studies met our inclusion criteria, with a total of 6787 patients; mean age was 92.4 and 35% were male.

The incidence of in-hospital death was 21.3%, 1.4% of our population suffered an in-hospital ischemic stroke and 11.1% faced acute renal failure; in-hospital major bleedings affected 1.7% of the population, but blood-transfusion was needed in 6.9%. Long-term mortality rate was 21.5%.

Killip III-IV at admission was related with increased in-hospital mortality (β : 0.2%; p : 0.041), but lower incidence of ARF (β : -0.6%; p : 0.004). Angiographic success was associated with a lower incidence of long-term all-cause mortality (β : -1.7%; p : 0.017) and higher incidence of ARF (β : 1.7%, p <0.001). A higher number of coronary stents implanted was associated with a lower incidence of long-term all-cause mortality (β : -73%; p : 0.01). A higher long-term all-cause mortality was related with male gender (β : 0.9%; p : 0.027) and previous MI (β : 1.5%; p : 0.007). Diabetes was associated with a lower incidence of long-term all-cause mortality (β : -0.8%; p : 0.014) despite a higher incidence of in-hospital blood transfusion (β : 0.5%, p : 0.05), while a history of MI (β : 0.1%; p : 0.049), as well as the use of GPI (β : 0.04) was related with a higher incidence of in-hospital major bleeding. The use of IABP was related with a lower incidence of long-term all-cause death (β : 6.5%; p <0.001) and in-hospital major bleeding (β : -0.4%; p : 0.038).

Discussion: Our meta-analysis, pooling the largest cohort of nonagenarians undergoing pPCI confirms the feasibility of urgent percutaneous coronary intervention also in this frail population. In particular, although angiographic success increased the incidence of in-hospital ARF, it was associated with a higher long-term survival underling the pivotal role of myocardial reperfusion.