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Coronary stenting versus balloon angioplasty for acute myocardial infarction: a meta-regression analysis of randomized trials.

Abstract:
INTRODUCTION: Although stenting has been shown to reduce the need for target vessel revascularization (TVR) in acute myocardial infarction (AMI), the benefits in terms of mortality and reinfarction are still unclear. Previous meta-analyses have failed to include all currently available randomized trials. The aim of the current study was to perform an updated meta-analysis to evaluate the benefits of coronary stenting for AMI in terms of mortality, reinfarction, and TVR, and whether these benefits correlated with the patient's risk profile. METHODS: The literature was scanned by formal searches of electronic databases (MEDLINE and CENTRAL) from January 1990 to September 2006. We examined all completed, published, randomized trials of coronary stenting for AMI. The following key words were used for study selection: randomized trial, myocardial infarction, reperfusion, primary angioplasty, rescue angioplasty, stenting, and balloon angioplasty. Information on study design, type of stent, inclusion and exclusion criteria, primary endpoint, number of patients, angiographic and clinical outcome, were extracted by two investigators. Disagreements were resolved by consensus. RESULTS: A total of 13 randomized trials were identified and analyzed involving 6922 patients (3460 or 50% randomized to stent and 3462 or 50% to balloon). Stenting was not
associated with a significant reduction in 30-day (2.9% versus 3.0%, p=0.81) and 1-year mortality (5.1% versus 5.2%, p=0.81), as compared to balloon angioplasty. However, a significant relationship was observed between patient's risk profile and mortality benefits from coronary stenting at 30-day (beta -0.63 [-25.4; -2.45], p=0.022) and 1-year follow-up (beta -0.61 [-15.9; -0.76], p=0.034). Stenting was associated with benefits in terms of TVR at both 30-day (3.1% versus 5.1%, p<0.0001) and 6 to 12 months (11.3% versus 18.4%, p<0.0001) follow-up, without any difference in terms of reinfarction. CONCLUSIONS: Among AMI patients undergoing primary angioplasty, coronary stent implantation, when anatomically and technically feasible, may be considered, in addition to benefits in terms of TVR, to reduce mortality in high-risk patients, who may be identified by the use of validated risk scores.