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A systematic review and meta-analysis of intra-aortic balloon pump therapy in ST-elevation myocardial infarction: should we change the guidelines?

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Source

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Abstract

Aims Intra-aortic balloon counterpulsation (IABP) in ST-segment elevation myocardial infarction (STEMI) with cardiogenic shock is strongly recommended (class IB) in the current guidelines. We performed meta-analyses to evaluate the evidence for IABP in STEMI with and without cardiogenic shock. Methods and results Medical literature databases were scrutinized to identify randomized trials comparing IABP with no IABP in STEMI. In absence of randomized trials, cohort studies of IABP in STEMI with cardiogenic shock were identified. Two separate meta-analyses were performed respectively. The first meta-analysis included seven randomized trials (n = 1009) of STEMI. IABP showed neither a 30-day survival benefit nor improved left ventricular ejection fraction, while being associated with significantly higher stroke and bleeding rates. The second meta-analysis included nine cohorts of STEMI patients with cardiogenic shock (n = 10529). In patients treated with thrombolysis, IABP was associated with an 18% [95% confidence interval (CI), 16-20%; P < 0.0001] decrease in 30 day mortality, albeit with significantly higher revascularization rates compared to patients without support. Contrariwise, in patients treated with primary percutaneous coronary intervention, IABP was associated with a 6% (95% CI, 3-10%; P < 0.0008) increase in 30 day mortality. Conclusion The pooled randomized data do not support IABP in patients with high-risk STEMI. The meta-analysis of cohort studies in the setting of STEMI complicated by cardiogenic shock supported IABP therapy adjunctive to thrombolysis. In contrast, the observational data did not support IABP therapy adjunctive to primary PCI. All available observational data concerning IABP therapy in the setting of cardiogenic shock is importantly hampered by bias and confounding. There is insufficient evidence endorsing the current guideline recommendation for the use of IABP therapy in the setting of STEMI complicated by cardiogenic shock. Our meta-analyses challenge the current guideline recommendations.