Effect of high-dose statin pretreatment in patients with ST-segment elevation myocardial infarction undergoing primary percutaneous coronary intervention: meta-analysis of randomized controlled trials

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Introduction: Current guidelines recommend the use of high doses of statins in patients with acute coronary syndrome. However, up to now, there is not enough evidence about the time of its onset in patients with acute myocardial infarction with ST elevation (STEMI) undergoing primary angioplasty. We conducted a systematic review and meta-analysis with the aim of evaluating the efficacy of pre-treatment with statins in high doses in the short term in patients with STEMI treated with primary angioplasty.

Methods: A systematic search was carried out in Pubmed, EMBASE, Scopus and Cochrane database, LILACS, and references of relevant articles were searched manually. We included randomized clinical trials (RCTs) comparing pretreatment with high doses of statins (rosuvastatin / atorvastatin) with low doses or without treatment published until April 2018. We evaluated the incidence of MACE (death, spontaneous myocardial infarction, coronary revascularization and stroke) at 30 days. In addition the presence of final TIMI III flow, TIMI blush grade, CPK peak, stent thrombosis and death from any cause during follow-up were evaluated. The data were combined as relative risk (RR) or difference of means (DM) with their 95% confidence interval (CI), using RevMan software. The meta-analysis was performed with the fixed effects model or random effects according to the heterogeneity.

Results: Six RCTs met the inclusion criteria with a total of 1454 patients. The pretreatment with statins in high doses was associated with a decrease in MACE (RR 0.52 CI 95% 0.37-0.77, I2=0%, P=0.001). The pretreatment was not associated with a reduction of the final TIMI III flow (RR 1.03 CI 95% 0.98-1.09, I2=0%, P=0.1), CPK peak (MD 13.99 CI95% -12.68-40.6; I2=0%; P=0.3), or stent thrombosis (RR 0.54 CI95% 0.1-2.85; I2 = 0%; P = 0.46), neither death in the follow-up (RR 0.52 CI95% 0.16-1.68, I2=0%, P=0.27). In addition, an improvement in the degree of myocardial blush TIMI was observed (MD 0.36 CI95% 0.20-0.52, I=0%, P<0.0001).

Conclusion: In this meta-analysis, treatment with high doses of statins prior to primary angioplasty in STEMI significantly reduced adverse cardiac events at 30 days. In addition, an improvement in the degree of myocardial blush was observed in the pretreatment group with high-dose statins. Therefore, the findings of this meta-analysis can help guide medical decision making regarding the time of onset of statins in STEMI.