

Coronary Artery Calcium Score and Statin Treatment Effect on Myocardial Infarction and Major Adverse Cardiovascular Event of Atherosclerotic Cardiovascular Disease: A Systematic Review and Meta-Analysis

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Abstract : Background: Coronary artery calcium (CAC) scores play an important role in improving prognostic accuracy and can be selectively used to guide the allocation of statin therapy for atherosclerotic cardiovascular disease outcomes and potentially associated with the occurrence of MACE (Major Adverse Cardiovascular Event) and MI (Myocardial Infarction). Objective: This systematic review and meta-analysis aim to analyze the findings of a study about CAC Score and statin treatment effect on MI and MACE risk. Methods: Search for published scientific articles using the PRISMA (Preferred Reporting, Items for Systematic Reviews and Meta-Analysis) method conducted on PubMed, Cochrane Library, and Medline databases published in the last 20 years on "coronary artery calcium" AND "statin" AND "cardiovascular disease" Further systematic review and meta-analysis using RevMan version 5.4 were performed based on the included published scientific articles. Results: Based on 11 studies included with a total of 1055 participants, we performed a meta-analysis and found that individuals with CAC score > 0 increased risk ratio of MI 8.48 (RR = 9.48: 95% CI: 6.22 - 14.45) times and MACE 2.48 (RR = 3.48: 95% CI: 2.98 - 4.05) times higher than CAC score 0 individual. Statin compared against non-statin treatment showed a statistically insignificant overall effect on the risk of MI (P = 0.81) and MACE (P = 0.89) in an individual with elevated CAC score 1 - 100 (P = 0.65) and > 100 (P = 0.11). Conclusions: This study found that an elevated CAC scores individual has a higher risk of MI and MACE than a non-elevated CAC score individual. There is no significant effect of statin compared against non-statin treatment to reduce MI and MACE in elevated CAC score individuals of 1 - 100 or > 100.

Keywords : coronary artery calcium, statin, cardiovascular disease, myocardial infarction, MACE

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