

Abstract

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Does carotid intima-media thickness regression predict reduction of cardiovascular events? A meta-analysis of 41 randomized trials.

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OBJECTIVES: The purpose of this study was to verify whether intima-media thickness (IMT) regression is associated with reduced incidence of cardiovascular events.

BACKGROUND: Carotid IMT increase is associated with a raised risk of coronary heart disease (CHD) and cerebrovascular (CBV) events. However, it is undetermined whether favorable changes of IMT reflect prognostic benefits.

METHODS: The MEDLINE database and the Cochrane Database were searched for articles published until August 2009. All randomized trials assessing carotid IMT at baseline, at end of follow-up, and reporting clinical end points were included. A weighted random-effects meta-regression analysis was performed to test the relationship between mean and maximum IMT changes and outcomes. The influence of baseline patients' characteristics, cardiovascular risk profile, IMT at baseline, follow-up, and quality of the trials was also explored. Overall estimates of effect were calculated with a fixed-effects model, random-effects model, or Peto method.

RESULTS: Forty-one trials enrolling 18,307 participants were included. Despite significant reduction in CHD, CBV events, and all-cause death induced by active treatments (for CHD events, odds ratio [OR]: 0.82, 95% confidence interval [CI]: 0.69 to 0.96, $p = 0.02$; for CBV events, OR: 0.71, 95% CI: 0.51 to 1.00, $p = 0.05$; and for all-cause death, OR: 0.71, 95% CI: 0.53 to 0.96, $p = 0.03$), there was no significant relationship between IMT regression and CHD events (Tau 0.91, $p = 0.37$), CBV events (Tau -0.32, $p = 0.75$), and all-cause death (Tau -0.41, $p = 0.69$). In addition, subjects' baseline characteristics, cardiovascular risk profile, IMT at baseline, follow-up, and quality of the trials did not significantly influence the association between IMT changes and clinical outcomes.

CONCLUSIONS: Regression or slowed progression of carotid IMT, induced by cardiovascular drug therapies, do not reflect reduction in cardiovascular events.

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