Prediction of future atherosclerosis in 13 years from young asymptomatic adults

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Aim: To compare the Pooled Cohort Equation (PCE) and Ideal Cardiovascular Health Score (ICHS) with a simpler cardiovascular risk score not requiring laboratory tests (the Fuster-BEWAT score, FBS) in predicting the presence and extent of subclinical atherosclerosis 13 years later.

Methods: Data included 894 adults (48% male) who were aged 26–36 years at baseline and 40–50 years at follow-up. The primary outcome was the presence of carotid plaque measured by ultrasound at follow-up. Secondary outcomes were number of arteries affected, plaque thickness and plaque area. All three scores were calculated at both baseline and follow-up.

Results: At follow-up, 86 participants (9.6%) had unilateral carotid plaques and 23 participants (2.6%) had bilateral carotid plaques. At baseline, all three scores were predictive of the presence of carotid plaque at follow-up (PCE odds ratio (OR) = 1.42 [95% CI: 1.19–1.70], ICHS OR=0.87 [0.77–0.99], FBS OR=0.86 [95% CI: 0.77–0.96]) and all secondary outcomes. All baseline scores predicted outcomes more strongly than those at follow-up, and did so independent of any changes over 13 years of follow-up. Similar levels of discriminatory power were found for all three baseline scores in predicting the presence of carotid plaque after 13 years (PCE C-statistic = 0.69 [95% CI: 0.63–0.75], ICHS C-statistic = 0.67 [95% CI: 0.61–0.74] and FBS C-statistic = 0.68 [95% CI: 0.62–0.74]).

Conclusions: All baseline scores predicted subclinical atherosclerosis 13 years later. The similar discrimination of the scores highlights the benefit of using FBS as a simpler and more feasible risk score for predicting future cardiovascular risk in low-risk young people.