Diagonal earlobe crease (Frank’s sign) predicts obstructive coronary artery disease with modest accuracy

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Introduction: Traditional risk factors for cardiovascular disease (CVD) play an important role in the clinical evaluation of patients with symptoms suggestive of coronary artery disease (CAD). The utility of anthropometric indices, including diagonal earlobe crease (Frank’s sign), in predicting the risk of CAD is controversial.

Purpose: To investigate the association between Frank’s sign, traditional CVD risk factors, and obstructive CAD.

Methods: This prospective study included 1401 patients (mean age 65±10 years, 64% male) who underwent invasive coronary angiography for suspected acute or chronic coronary syndromes. In addition to routine clinical assessment, all patients underwent visual examination of both earlobes for the presence of Frank’s sign, defined as a diagonal earlobe fold (Figure A, arrow). All assessments were made by three independent readers, with a majority vote in case of disagreement. Obstructive CAD was defined by invasive coronary angiography as >50% diameter stenosis of the left main coronary artery or >70% diameter stenosis of any other major epicardial coronary artery.

Results: Unilateral or bilateral Frank’s sign was observed more frequently in patients with obstructive CAD than in those without it (73% vs 68% for unilateral and 55% vs 47% for bilateral Frank’s sign, p<0.05 for both). In the multivariate logistic regression model (Graph), bilateral Frank’s sign was independently associated with CAD [odds ratio (OR) 1.47, 95% confidence interval (CI) 1.17-1.85], along with smoking (OR 1.74, 95% CI 1.38-2.20), diabetes mellitus (OR 1.70, 95% CI 1.32-2.19), male sex (OR 1.99, 95% CI 1.58-2.52), and dyslipidemia (OR 1.52, 95% CI 1.06-2.19). However, diagnostic accuracy of Frank’s sign was modest [area under the curve (AUC) 0.54, 95%CI 0.51-0.57] and resembled that of traditional CVD risk factors (Graph).

Conclusion: Despite being independently associated with obstructive CAD, Frank’s sign is not a reliable clinical marker of CAD due to modest diagnostic accuracy.