Validation of Epicardial Adipose Tissue Thickness by Echocardiography for Predicting Coronary Artery Disease: a Multicenter Study

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Abstract

Purpose: Epicardial adipose tissue (EAT), the ectopic visceral fat surrounding the heart, is associated with the presence of coronary heart disease (CAD). Previously, we reported that EAT thickness in the anterior interventricular groove (EAT-AIG), measured using a high-frequency linear probe during echocardiography, can be a marker for CAD. Based on receiver operating characteristic analysis, EAT-AIG thickness >7.1 mm had the highest sensitivity and specificity for association with CAD. However, that was a single center study. This study is a validation trial to confirm our cut off value of EAT-AIG thickness.

Subjects and Methods: In this multicenter prospective cohort study, we enrolled 216 subjects (mean age 67±12 years, 134 males) who underwent coronary angiography (CAG) for the first time from April 1, 2017, to March 31, 2018. EAT-AIG thickness was measured before CAG by echocardiography, using a high-frequency linear probe. The cohort was divided into 2 groups based on a cut off value of EAT-AIG thickness >7.1 mm and any value ≤7.1 mm.

Results and Discussion: A total of 97 (45%) subjects were diagnosed with CAD by CAG. Patients with EAT-AIG thickness>7.1 mm had a significantly greater incidence of CAD (66% vs. 23%, p<0.001). EAT-AIG thickness >7.1 mm predicted the presence of CAD with 75% sensitivity and 68% specificity. Positive predictive value, negative predictive value, and accuracy were 66%, 77%, and 71%, respectively. EAT-AIG thickness had a better diagnostic value compared with other conventional risk factors (age, male gender, body mass index, hypertension, dyslipidemia, and smoking).

Conclusion: EAT-AIG thickness >7.1 mm, measured by echocardiography, is a useful, noninvasive marker for predicting CAD.

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