Prognostic value of fat attenuation index of pericoronary adipose tissue surrounding left anterior descending artery on coronary computed tomography angiography

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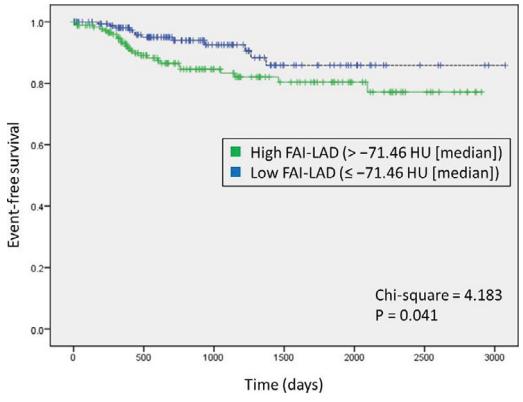
Background: Recent studies reported the association between elevated fat attenuation index (FAI) of pericoronary adipose tissue (PCAT) on coronary computed tomography angiography (CTA) and worse cardiac outcomes.

Purpose: We investigated the prognostic value of increased FAI-defined coronary inflammation status in patients with coronary artery disease.

Methods: Three-hundred fifty-eight patients (127 acute coronary syndromes [ACS], 231 stable coronary artery disease) with left anterior descending artery (LAD) as a culprit vessel who underwent coronary CTA were retrospectively studied. The FAI defined as the mean CT attenuation value of PCAT (–190 to –30 Hounsfield Unit [HU]) was measured at the proximal 40-mm segment of LAD. All subjects were divided into two groups according to the median value of FAI in the LAD. The association between the incidence of major adverse cardiac events (MACE) including all-cause death, myocardial infarction, heart failure, target and non-target vessel revascularization were evaluated.

Results: In a total of 358 patients, median FAI values surrounding the LAD was –71.46 (interquartile range, –77.10 to –66.34) HU. Thirty-eight patients (10.6%) experienced MACE during the follow-up period (median, 818 days). Kaplan-Meier analysis revealed that high FAI-LAD (>–71.46 HU [median]) was significantly associated with the incidence of MACE (log-rank test, chi-square = 4.183, P=0.041) (Figure).

Conclusions: In patients with coronary artery disease with culprit LAD lesions, elevated FAI of PCAT surrounding the LAD was associated with worse clinical outcomes. Assessment of FAI may have a potential for potential for non-invasive risk-stratification by coronary CTA.



Kaplan-Meier analysis for MACE