IMPACT OF ω3/6 POLYUNSATURATED FATTY ACIDS RATIO ON THE PREVALENCE OF CORONARY ARTERY DISEASE ASSESSED BY 320-ROW CT CORONARY ANGIOGRAPHY

ACC Moderated Poster Contributions
McCormick Place South, Hall A
Sunday, March 25, 2012, 9:30 a.m.-10:30 a.m.

Session Title: Prevention: Clinical: Novel Cardiovascular Disease Risk Factors: What’s New?
Abstract Category: 9. Prevention: Clinical
Presentation Number: 1182-205

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Background: Previous studies have shown that eicosapentaenoic acid (EPA)/ arachidonic acid (AA) may be a marker of coronary artery disease (CAD). However, there have been few studies to assess the association of plasma EPA/AA ratio on the prevalence of CAD by using a computed tomography coronary angiography (CTA). The aim of this study was to assess the relationship between the EPA/AA ratio and CAD in patients suspected for CAD by using 320-row CTA.

Methods: The study comprised 290 consecutive patients with suspected CAD who were referred for 320-row coronary CT scan from April to September 2010 at our institution. Presence of CAD was defined by a luminal narrowing ≥ 50%. Each patient also underwent a medical interview and fasting blood samples were obtained to measure plasma total fatty acid concentrations. We defined EPA/AA as an O3/6 polyunsaturated fatty acids (PUFAs) ratio. The EPA/AA and the coronary artery calcium score (CACS) were log-transformed because of their skewed distribution. Between-group (CAD positive and negative) differences were compared and multivariate logistic regression analysis was used to assess the adjusted effect of a variety of risk factors on the presence of CAD. Exclusion criteria were to use of fish oil or drug related FUFAs.

Results: Of the 290 patients, CAD was detected in 95 patients (32.8%). Statistical differences between the CAD group and the non CAD group were age (67±11 vs 63±12 years, p<0.003), male gender (73 vs 57%, p=0.01), smoking (55 vs 39%, p=0.011), HbA1c (5.9±1.0 vs 5.6±0.8%, p=0.002), HDL-cholesterol (52.7±12 vs 58.5±14.9 mg/dl, p=0.001), eGFR (69.2±16.5 vs 76.0±16.9 ml/min, p=0.001), Log-CACS (5.3±4.0 vs 0.001) and Log-EPA/Log-AA (0.80±0.11 vs 0.83±0.12, p=0.02). Multivariate logistic regression analysis showed that HbA1c (OR 1.76, 95% CI [1.168, 2.780], p = 0.0094), Log-CACS (OR 1.613, 95% CI [1.308, 1.029], p < 0.0001) and Log-EPA/Log-AA (0.023, 95% CI [0.001, 0.617], p = 0.0273) were significant independent predictors of CAD.

Conclusions: After adjustment for all traditional CAD risk factors, Log-EPA/Log-AA remains a significant independent predictor of the presence of CAD in patients suspected for CAD and referred for CTA.