Eicosapentaenoic acid therapy is associated with decreased coronary plaque instability assessed using optical frequency domain imaging

Abstract: 
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Authors:
T Konishi1, 1Hokkaido University - Sapporo - Japan,

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Background: The relationship between eicosapentaenoic acid (EPA) therapy and coronary plaque stability assessed by optical frequency domain imaging (OFDI) has not been thoroughly described.
Hypothesis: EPA therapy is associated with decreased plaque instability in patients undergoing percutaneous coronary intervention (PCI) using OFDI.
Methods: Data on coronary artery plaques from 121 patients presenting with acute coronary syndrome or stable angina who consecutively underwent PCI between October 2015 and July 2018 were retrospectively analyzed. Of these patients, 109 were untreated (no-EPA group), whereas 12 were treated with EPA (EPA group). Each plaque’s morphological characteristics were analyzed using OFDI.
Results: We used 1:4 propensity score matching for patients who received or did not receive EPA therapy before PCI. Baseline characteristics were balanced between both groups (age, sex, body mass index, diabetes mellitus, hypertension, dyslipidemia, chronic kidney disease, smoking, previous PCI or coronary artery bypass grafting, previous myocardial infarction, prior statin use, acute coronary syndrome, hemoglobin A1c level, low-density lipoprotein cholesterol concentration, triglyceride concentration, and high-density lipoprotein cholesterol concentration). The EPA group had significantly lower mean lipid index (818±806 vs. 1,574±891) and macrophage grade (13.5±5.9 vs. 19.3±7.4) but higher mean minimum fibrous cap thickness (109.2±55.7 vs. 81.6±36.4 µm) than the no-EPA group (P=0.010, 0.019, and 0.040, respectively). Multiple logistic regression analyses showed that prior EPA use was independently associated with lower lipid index and macrophage grade (P=0.043 and 0.024, respectively).
Conclusion: This OFDI analysis suggests that EPA therapy is associated with decreased plaque instability in patients undergoing PCI.