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Impact of omega-3 polyunsaturated fatty acids on coronary plaque instability: An integrated backscatter intravascular ultrasound study.

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Source

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Abstract

OBJECTIVE:

To assess the impact of omega-3 polyunsaturated fatty acids (ω 3 PUFAs) on coronary plaque instability.

METHODS:

Serum content of eicosapentaenoic acid (EPA), docosapentaenoic acid (DPA), and docosahexaenoic acid (DHA) was measured in 336 of 368 consecutive patients suspected of having coronary artery disease who underwent coronary angiography. Conventional and integrated backscatter intravascular ultrasound (IB-IVUS) parameters were analyzed in 116 patients with 128 coronary plaques, using a 43-MHz (motorized pullback 0.5mm/s) intravascular catheter (View It, Terumo Co., Japan). Lipid-rich plaques were classified into two categories according to their components.

RESULTS:

Patients with acute coronary syndrome had significantly lower levels of ω 3 PUFAs (especially of EPA and DPA) than those without it. IB-IVUS analyses showed that ω 3 PUFAs correlated inversely with % lipid volume and positively with % fibrous volume. Patients with low EPA levels, low DPA levels, and low DHA levels had a significantly higher % lipid volume ($p=0.048$, $p=0.008$, and $p=0.036$, respectively) and a significantly lower % fibrous volume ($p=0.035$, $p=0.008$, and $p=0.034$, respectively) than those with high levels of these fatty acids. Even after adjustment for confounders, the presence of both low EPA and low DPA levels proved to be an independent predictor for lipid-rich plaques in any of the two categories.

CONCLUSIONS:

A lower serum content of ω 3 PUFAs (especially of EPA and DPA) was significantly associated with lipid-rich plaques, suggesting the contribution to the incidence of acute coronary syndrome.