1: J Vasc Surg. 1988 Jan;7(1):108-18.

Links

Inhibition of vein graft intimal thickening by eicosapentanoic acid: reduced thromboxane production without change in lipoprotein levels or low-density lipoprotein receptor density.

Cahill PD, Sarris GE, Cooper AD, Wood PD, Kosek JC, Mitchell RS, Miller DC.

Department of Cardiovascular Surgery, Stanford University Medical School, CA.

Marine lipids containing omega-3 fatty acids (chiefly, eicosapentanoic acid [EPA] and docosahexanoic acid [DHA]) may inhibit the development of atherosclerotic vascular disease, but the mechanisms responsible for this putative beneficial effect are unknown. We investigated the effects of EPA and DHA in a canine model of accelerated vein graft arteriosclerosis during a 3-month period. Twenty-five dogs were divided into three dietary groups: group I (control), group II (2.5% cholesterol), and group III (2.5% cholesterol plus 2 gm EPA/day [as MaxEPA]). The effects of EPA on vein graft intimal thickening, platelet and vascular prostaglandin metabolism, lipid and lipoprotein receptor metabolism, and hematologic parameters were assessed. Cholesterol feeding caused a significant 54% increase in graft intimal thickness compared with control animals (124.9 +/- 50.4 vs 81.2 +/- 32.4 micron; p = 0.013), which was prevented by supplementation with EPA in group III (56.9 +/- 30.0 micron; p = 0.001 vs group II). Intimal thickness in group III was not significantly different from that of control. EPA supplementation was also associated with a 38% decline in serum thromboxane levels from 457.0 +/- 129.3 pg/0.1 ml in group II to 283.5 +/- 96.9 pg/0.1 ml in group III (p = 0.007). The alterations in lipoprotein metabolism associated with cholesterol feeding were not affected by EPA: in both groups II and III, serum cholesterol and high-density lipoproteins and liver cholesterol content were elevated and hepatic low-density lipoproteins (LDL) receptor content was reduced. There were no differences between the three groups in terms of vein graft or native vessel prostacyclin production, hematocrit, platelet count, or coagulation parameters. In this canine model, dietary supplementation with marine omega-3 fatty acids reduced the extent and magnitude of accelerated vein graft intimal thickening induced by hypercholesterolemia; moreover, this beneficial effect was associated with lower serum thromboxane production and appeared to be independent of alterations in lipoprotein metabolism or LDL receptor density.

PMID: 3336117 [PubMed - indexed for MEDLINE]

Related articles

Mechanisms responsible for inhibition of vein-graft arteriosclerosis by fish oil. [Circulation. 1989]

Diets enriched in menhaden fish oil, seal oil, or shark liver oil have distinct effects on [Mol Cell Biochem. 1997]

On the effects of dietary n-3 fatty acids (Maxepa) on plasma lipids and lipoproteins in [Atherosclerosis. 1985]

Review Role of prescription omega-3 fatty acids in the treatment of hypertriglyceriden [Pharmacotherapy. 2007]

Review Dietary fish oils containing eicosapentaenoic acid and the prevention of atherosclerosis [CMAJ. 1988]

» See reviews... | » See all...

Cited by 4 PubMed Central articles

Potentiation of the hyporeactivity induced by in vivo endothelial injury in the rat caroti [Br J Pharmacol. 1995]

Effects of aspirin, dipyridamole, and cod liver oil on accelerated myointimal proliferation in [Ann Surg. 1988]

Immunohistochemical localization of low density lipoprotein receptors in adrenal glan [J Clin Invest. 1989]

» See all...

Recent Activity

Turn Off Clear

Inhibition of vein graft intimal thickening by eicosapentanoic acid: reduced thromboxane p...

Restoration of left ventricular systolic performance after reattachment of the mitral

Valvular-ventricular interaction: the importance of the mitral chordae tendineae in terms ...

Choledochocele: case report, literature review, and a proposed classification.

Physiologic role of the mitral apparatus in left ventricular regional mechanics, contracti...

» See more...