FPIN's Clinical Inquiries

Fish Oil for Treatment of Dyslipidemia

RAMA NARLA, MD, and SHANNON B. PECK, PhD, *Baylor Family Medicine Residency, Garland, Texas*
KEFENG (MAYLENE) QIU, MLIS, *University of Pennsylvania Biomedical Library, Philadelphia, Pennsylvania*

Clinical Inquiries provides answers to questions submitted by practicing family physicians to the Family Physicians Inquiries Network (FPIN). Members of the network select questions based on their relevance to family medicine. Answers are drawn from an approved set of evidence-based resources and undergo peer review. The strength of recommendations and the level of evidence for individual studies are rated using criteria developed by the Evidence-Based Medicine Working Group (http://www.cebm.net/?o=1025).

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Clinical Question

How effective is fish oil in lowering lipid levels in adults with dyslipidemia?

Evidence-Based Answer

Supplementation with omega-3 fatty acids decreases triglyceride and very low-density lipoprotein cholesterol levels. However, it can also increase low-density lipoprotein (LDL) cholesterol levels. Treatment with omega-3 fatty acids does not decrease total mortality, cardiovascular events, or cancer incidence, and therefore should not be recommended to patients to decrease their risk of dyslipidemia. (Strength of Recommendation: A, based on meta-analyses of randomized controlled trials [RCTs].)

Evidence Summary

IMPROVEMENTS IN LABORATORY VALUES

A Cochrane review of 23 RCTs involving 1,075 participants with type 2 diabetes mellitus showed that supplementation with fish oil (average dosage of 3.5 g per day for an average of 8.9 weeks) lowered triglyceride levels by 8.1 mg per dL (0.1 mmol per L; $P < .00001$).[1] In treated patients, very low-density lipoprotein cholesterol levels decreased by 1.26 mg per dL (0.03 mmol per L; $P = .04$), and LDL cholesterol levels increased by 1.98 mg per dL (0.05 mmol per L; $P = .05$). There was no change in high-density lipoprotein cholesterol levels.

An earlier Cochrane review of 17 RCTs (N = 3,918) sought to determine the effect of omega-3 fatty acid supplementation on rates of mortality and cardiovascular events.[2] The meta-analysis of studies that included adults at risk of cardiovascular disease found that omega-3 fatty acid supplementation significantly reduced serum triglyceride levels (weighted mean difference = –7.2 mg per dL [–0.1 mmol per L];95% confidence interval [CI], –10.08 to –4.14). Total and high-density lipoprotein cholesterol levels did not change significantly. LDL cholesterol significantly increased (weighted mean difference = 2.34 mg per dL [0.06 mmol per L; 95% CI, 0.54 to 3.96]). It should be noted that this study examined omega-3 intake from fish and plant sources.

A systematic review of four RCTs concluded that supplementation with two omega-3 fatty acids (docosahexaenoic acid [DHA] and eicosapentaenoic acid [EPA]) in doses of 1.7 g or greater reduced triglyceride levels by at least 10% compared with baseline.[3] Patients with higher baseline triglyceride levels had the greatest benefit.

NO IMPROVEMENTS IN PATIENT OUTCOMES

Two meta-analyses investigated the effects of fish oil supplementation on mortality rates. A meta-analysis of 17 RCTs (N = 63,279) identified no relationship between omega-3 fatty acid intake and mortality (relative risk = 0.96; 95% CI, 0.91 to 1.02).[4] Follow-up for participants in the included studies ranged from one to 6.2 years. A Cochrane review of 48 RCTs (N = 36,913) and 41 cohort studies evaluating participants over six months showed no reduction in rates of overall mortality, cardiovascular events, or cancer.[2] However, the length of follow-up may have been inadequate to establish effectiveness.

Recommendations from Others

The American Heart Association recommends daily supplementation with 2 to 4 g of EPA/DHA for patients with elevated triglyceride levels.[3] The amount of EPA/DHA ranges from 300 to approximately 850 mg, ▶

depending on the brand.[3] The National Cholesterol Education Program expert panel has not recommended a specific dosage of omega-3 fatty acids for supplementation.[5]

Address correspondence to Rama Narla, MD, at rama.narla@baylorhealth.edu. Reprints are not available from the authors.

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