Fish oils don’t reduce arrhythmias or all cause mortality, but may reduce deaths from cardiac causes

A recent systematic review found no benefit for fish oil supplements in reducing the risk of sudden cardiac death or all cause mortality. There was a reduction in death from cardiac causes, although this may have resulted from publication bias.

Action

In the secondary prevention of myocardial infarction (MI), clinicians should continue to follow NICE guidance and advise patients to eat at least 7g of fish oils (omega 3 fatty acids) per week from two to four portions of oily fish, e.g. salmon, mackerel, sardines. Fish oil supplements can be ***considered*** in those who experienced an MI in the previous 3 months. However, the likely absolute benefit from adding yet another medication should be taken into account. Fish oil supplements should not routinely be offered to people who experienced an MI more than 3 months previously. Patients without documented cardiovascular disease should be advised to eat at least two portions of fish a week, including one of oily fish, as part of a healthy, balanced diet.

What is the background to this?

Evidence on the effect of fish oils in reducing cardiovascular (CV) events and mortality has been conflicting. A Cochrane review concluded that it’s not clear whether or not omega 3 fatty acids reduce total mortality or CV events in the general population or those with, or at high risk of, CV disease. There is some evidence from the GISSI-Prevenzione trial to suggest a possible benefit for patients with a recent MI (≤3 months), and NICE recommend that fish oil supplements may be *considered* for these patients if they are not achieving 7g of omega 3 fatty acids per week from oily fish.

Further information on omega 3 fatty acids can be found on the Lifestyle and Post MI floors of NPCi

What does this review claim?

This was a systematic review of 12 randomised controlled trials (RCTs) comparing fish oil supplements with controls (e.g. olive oil, corn oil). It included 32,779 patients from a range of populations (e.g. primary prevention, post MI, percutaneous coronary angioplasty).

There was **no statistically significant reduction** in the risk of sudden cardiac death (6 studies, n=31,111; odds ratio [OR] 0.81, 95% confidence interval [CI] 0.52 to 1.25, P=0.33) or all cause mortality (11 studies, n=32,439; OR 0.92, 95%CI 0.82 to 1.03, P=0.14) with fish oil supplements. In the 3 studies (n=1148) that included patients with implantable cardiac defibrillators, there was also **no statistically significant reduction** in the risk of appropriate implantable cardiac defibrillator intervention (OR 0.90, 95%CI 0.55 to 1.46, P=0.67). There was a **significant reduction** in death from cardiac causes (11 studies, n=32,519; OR 0.80, 95%CI 0.69 to 0.92, P=0.002, number needed to treat [NNT] = 189).
Pre-specified subgroup analyses in patients with coronary artery disease or post MI found a significant reduction in sudden cardiac death (4 studies, n=15,528; OR 0.74, 95%CI 0.59 to 0.92, P=0.008) and in deaths from cardiac causes compared with placebo (8 studies, n=16,390; OR 0.80, 95%CI 0.69 to 0.93, P=0.004) with fish oil supplements.

So what?

This systematic review found no beneficial effect for fish oil supplementation on arrhythmic events (sudden cardiac death and appropriate implantable cardiac defibrillator intervention) or all cause mortality. Although there was a significant reduction in death from cardiac causes, the absolute risk reduction observed was small (0.53%). Furthermore, the funnel plot suggested publication bias, where neutral or negative trials may not have been published as often as positive ones. Many of the RCTs included in the review had very different patient populations, and there was also a wide variation in the formulations and dosages used in the trials. As the authors point out, the optimal dose or formulation of fish oil is unknown.
Clinicians should not change their practice as a result of this review. Fish oil supplements should only be *considered* for patients who have had an MI within the previous 3 months, and who are not achieving 7g of omega 3 fatty acids per week from oily fish e.g. salmon, mackerel, sardines.

Study details

Citation: León H, Shibata MC, Sivakumaran S, et al. Effect of fish oil on arrhythmias and mortality: systematic review. BMJ 2008;337:a2931 doi:10.1136/bmj.a2931

Design: Systematic review of 12 RCTs (≥3 months duration) of fish oil as dietary supplements in adults. Most trials were of good methodological quality, although the largest RCT (n=18,645) was of poor quality (Jadad score 2, range 1–5).

Patients: 32,779 patients from a range of populations e.g. primary prevention, post-MI, post CABG, implantable cardiac defibrillation and percutaneous coronary angioplasty.

Intervention & comparison: Fish oil supplements were compared with control (e.g. olive oil, corn oil). Primary outcomes were arrhythmic endpoints of appropriate cardiac defibrillator intervention (confirmed by ECG) and sudden cardiac death. Secondary outcomes were all cause mortality and death from cardiac causes.

Results:

Primary outcomes: appropriate implantable cardiac defibrillator intervention (3 studies, n=1148) — OR 0.90, 95%CI 0.55 to 1.46, P=0.67. Sudden cardiac death (6 studies, n=31,111) — OR 0.81, 95%CI 0.52 to 1.25, P=0.33.

Secondary outcomes: death from cardiac causes (11 studies, n=32,519) — OR 0.80, 95%CI 0.69 to 0.92, P=0.002. All cause mortality (11 studies, n=32,439) — OR 0.92, 95%CI 0.82 to 1.03, P=0.14. Subgroup analyses in patients with coronary artery disease or post MI: sudden cardiac death (4 studies, n=15,528) — OR 0.74, 95%CI 0.59 to 0.92, P=0.008, deaths from cardiac causes (8 studies, n=16,390) —OR 0.80, 95%CI 0.69 to 0.93, P=0.004.

Sponsorship: None