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EFFICACY AND SAFETY OF ω-3 FATTY ACIDS FOR THE PREVENTION OF ATRIAL FIBRILLATION: A META-ANALYSIS OF RANDOMISED CONTROLLED TRIALS

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Purpose The effects of ω-3 fatty acids (PUFA) on the prevention of atrial fibrillation (AF) appear inconsistent in randomised controlled trials (RCTs). Several RCTs appeared to show benefit, but others provided conflicting findings. The authors performed a meta-analysis of RCTs to assess the efficacy and safety of PUFA for the prevention of AF.

Methods The authors searched the electronic databases of Medline via PubMed (January 1966 to March 2011), EMBASE (January 1974 to March 2011), Web of Science (January 1986 to March 2011), the Cochrane Central Register of Controlled Trials (Cochrane Library Issue 3, 2011) and the Chinese Biomedical Literature Database (January 1978 to March 2011) for all RCTs dealing with the prevention of AF with PUFA compared with placebo. No language restriction was applied. Two reviewers independently selected studies for inclusion and extracted the data. Outcomes of interest include incidence or recurrence of AF, complications and adverse events. The same reviewers independently assessed the methodological quality of every study using the Jadad's scale that assessed randomisation, allocation concealment, blinding and withdrawals/drop-out of studies by classing them on a scale 1~7. Disagreements were resolved by discussion or by involving a third reviewer. RevMan 5.1 was used to combine and analyse the data. Studies were pooled using relative risk (RR) after assessing for heterogeneity. The data were analysed using fixed effects models. When significant heterogeneity was present, a random effects model was used.

Results The authors identified twelve RCTs with 2146 patients that met our inclusion criteria. Of the twelve studies, six studies with 859 patients were designed to evaluate the effects of PUFA on postoperative AF (POAF) in patients undergoing open heart surgery as primary prevention, and six studies with 1287 patients were designed to evaluate the effects of PUFA on AF either in the postelectrical cardioversion setting or in patients with symptomatic paroxysmal or persistent AF as secondary prevention. For primary prevention: the use of high dose of PUFA (content of DHA>1g/d) significantly reduced the incidence of POAF (RR 0.70, 95% CI 0.52 to 0.93, p=0.01), whereas low dose of PUFA (content of DHA≤1g/d) did not significantly reduce the risk of POAF (RR 1.06, 95% CI 0.83 to 1.35, p=0.65). For secondary prevention: the use of PUFA no significantly reduced the recurrence of AF compared with control (RR 0.94, 95% CI 0.75 to 1.17, p=0.57). Complications and adverse events are no different between two groups (RR 1.09, 95% CI 0.92 to 1.29, p=0.30).

Conclusion Our meta-analysis shows that high dose of PUFA revealed statistically significant prevention effects on primary prevention, whereas low dose of PUFA did not reduce the risk of POAF. PUFA did not reveal statistically significant prevention effects on secondary prevention. Complications and adverse events are no different between two groups. Unfortunately, our meta-analysis does not provide the optimal duration and dosage of perioperative PUFA. Large-scale RCTs designed to compare different dose intensity and lengths of PUFA therapy should be conducted in the future. PUFA might be a choice for patients undergoing open heart surgery. However, as it is now, the authors cannot recommend the routine use of PUFA for the prevention of AF.