PREVENTION

No benefit of n-3 fatty acid supplements in diabetes

Credit: Getty/Shana Novak

Observational studies indicate a benefit of n-3 fatty acids in reducing the risk of cardiovascular disease, but data from the randomized, controlled ASCEND trial, presented at the 2018 ESC Congress, indicate no reduction in cardiovascular events with n-3 fatty acid dietary supplementation in patients with diabetes mellitus.

The main dietary source of n-3 fatty acids (also known as omega-3 or ω-3 fatty acids) is oily fish. The AHA recommends supplements of these polyunsaturated fatty acids for the secondary prevention of coronary heart disease, but the benefits of dietary supplementation of n-3 fatty acids are uncertain.

In the ASCEND trial, 15,480 patients with diabetes but without evidence of atherosclerotic cardiovascular disease were randomly assigned to receive a daily 1 g capsule containing either n-3 fatty acids or olive oil as a placebo. During follow-up (mean 7.4 years), the primary end point of a first serious vascular event (a nonfatal myocardial infarction or stroke, transient ischaemic attack, or vascular death) occurred in 8.9% of the fatty acid group and 9.2% of the placebo group (rate ratio 0.97, 95% CI 0.87–1.08, $P=0.55$). The rate of the secondary outcome of a serious vascular event or any arterial revascularization was not significantly different between the two groups (11.4% versus 11.5%), nor was the rate of death from any cause (9.7% versus 10.2%).

"The ASCEND study was the largest and longest ever placebo-controlled study on this topic," comments corresponding author of the trial publication, Louise Bowman. "We found that fish oils are safe but do not provide any benefit and so we would not recommend fish oil supplements for people with diabetes and no history of cardiovascular disease. There is no evidence of benefit for other groups either and so we would suggest that guidelines should be reviewed in light of the new evidence."

> "we would not recommend fish oil supplements for people with diabetes"

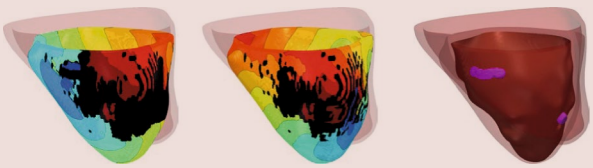
The researchers note that fish clearly contain other nutrients, and consumption of one food alters the consumption of others. Ongoing trials are investigating the effects of higher doses of n-3 fatty acids than the 1 g dose used in ASCEND.

Gregory B. Lim

ORIGINAL ARTICLE The ASCEND Study Collaborative Group. Effects of n-3 fatty acid supplements in diabetes mellitus. *N. Engl. J. Med.* https://doi.org/10.1056/NEJMoa1804989 (2018)

ARRHYTHMIAS

3D virtual heart to guide VT ablation



Activation maps of induced arrhythmia in patient model and VAAT-predicted ablation targets. Reprinted from Prakosa, A. et al. Personalized virtual-heart technology for guiding the ablation of infarct-related ventricular tachycardia. *Nat. Biomed. Eng.* https://doi.org/10.1038/s41551-018-0282-2 (2018)

Ventricular tachycardia (VT) is common in patients after myocardial infarction (MI) and can lead to sudden cardiac death (SCD); treatment options include catheter-based radiofrequency VT ablation, but important limitations, such as the difficulty of localizing ablation targets in infarcted tissues, lower the success rate of the procedure. In a new, proof-of-concept study, Natalia Trayanova and colleagues report the use of 3D personalized heart models for noninvasive guidance of VT ablation in patients with ischaemic cardiomyopathy.

The virtual-heart arrhythmia ablation targeting (VAAT) technology uses computational modelling to reconstruct geometric models of the hearts of patients with MI from clinical MRI data and incorporates cell and tissue properties into these models; simulations of electrical activity are then executed to evaluate patient-specific VT and identify ablation targets.

The investigators had previously demonstrated the feasibility of using 3D cardiac models to predict the risk of SCD in patients with ischaemic cardiomyopathy; the new study was designed to explore the clinical applications of the 'virtual heart' beyond diagnostic purposes.

"The study represents the first attempt to incorporate personalized simulation predictions as part of antiarrhythmia treatment," explains Trayanova. First, a retrospective study including 21 patients that had undergone MRI and successful infarct-related VT ablation confirmed the capacity of VAAT to predict the clinical procedure targets. VAAT was then used in a prospective study including five patients to guide VT ablation without previous electrical mapping. The approach successfully terminated VT in the patients with inducible VT after MI.

> "The results demonstrate the feasibility of integrating the computer-simulated prediction of ablation targets into the clinical routine"

"The results demonstrate the feasibility of integrating the computer-simulated prediction of ablation targets into the clinical routine," says Trayanova, adding that a larger prospective study has just been approved. "We expect that implementing the VAAT approach in the clinics will decrease the lengthy and invasive cardiac mapping process and reduce procedure complications," she concludes.

Alexandra Le Bras

ORIGINAL ARTICLE Prakosa, A. et al. Personalized virtual-heart technology for guiding the ablation of infarct-related ventricular tachycardia. *Nat. Biomed. Eng.* https://doi.org/10.1038/s41551-018-0282-2 (2018)