Intake of Marine-Derived Omega-3 Polyunsaturated Fatty Acids and Mortality in Renal Transplant Recipients


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Summary:

While renal transplantation offers a considerably higher quality of life relative to dialysis treatment, the survival of those receiving kidney transplants is lower than for the matched general population with excess cardiovascular disease in the patients being a key factor. It is known that higher intakes of EPA/DHA (via fish/seafood or supplementation) have shown benefit with respect to all-cause mortality and to cardiovascular (CV) mortality (particularly in those with pre-existing CV disease). The present research team recently reported upon a short follow-up study wherein a trend towards an inverse association between the intake of marine-derived omega-3 fatty acids and all-cause mortality was found in renal transplant patients (Br. J. Nutr., 116: 2066-2073 (2016)).

The present study enrolled 627 renal transplant recipients (RTR) with an average age of 53 years who were receiving standard medication for blood pressure control and immunosuppressive therapy. Their omega-3 intakes were assessed by the combined use of food-frequency questionnaires and Dutch food composition tables. The average EPA/DHA (combined) intake per day was 102 mgs and ranged from 42-215 mgs/day. The median follow-up time of the patients was 5.4 years during which 21 % died (130 patients) with 8 % (52 patients) dying from CV causes. For all patients combined and after normalizing for confounding factors, higher intakes of EPA/DHA were associated with a lower risk of all-cause mortality with a 15 % lower risk per EPA/DHA intake of 100 mgs. This benefit was particularly pronounced in the older sub-group of RTR (63 years and older) with a 25 % lower risk (but not in the younger group-below 63 years of age). The older sub-group also exhibited a 32 % lower
risk of CV mortality with the higher EPA/DHA intakes.

Dr. Holub’s Comments:

Whereas the present study related EPA/DHA intakes to all-cause and CV mortality in RTR, a relatively recent study (Clin. J. Am. Soc. Nephrol., 10: 1246-1256 (2015)) on 1990 Norwegian patients, followed up for a median period of 7 years, reported on better survival in those with higher circulating levels of omega-3 fatty acids in their blood serum phospholipid (biomarker for omega-3 status). Since the intakes of EPA/DHA in the present study would not be expected to elevate the blood levels to those in the higher quartiles (top 25 or 50 %) of the Norwegian study, it remains to be researched as to what potential benefit might be realized with much higher intakes of EPA/DHA than were consumed in the present Dutch study. The present study was not designed to address the potential mechanisms (eg., via immunomodulatory effects, others) by which EPA/DHA mediated their beneficial effects as noted particularly in the older patients.