Reference:

Oral Fish Oil Supplementation Raises Blood Omega-3 Levels and Lowers C-Reactive Protein in Haemodialysis Patients-a Pilot Study


Summary:

The present study was conducted since previous evidence-based reports from the literature have indicated that patients with end-stage kidney disease who are maintained on haemodialysis have shown lowered levels of the long-chain omega-3 fatty acids as DHA+EPA. These low levels reflected the very low intakes of dietary fish in this population. Since lower levels of DHA+EPA in the circulation have been associated with a higher risk of cardiovascular disease and fatal heart attacks, the present study evaluated the effect of supplementation with a fish oil concentrate containing DHA/EPA on the circulating levels of omega-3 fatty acids. In addition, patients on haemodialysis do experience difficulties in access due to thrombosis/blood clotting along with assorted risk factors for cardiovascular disease including elevated blood triglyceride levels and hypertension. Also, the present study evaluated the potential effect of omega-3 fatty acid supplementation on C-reactive protein levels in the circulation since this is regarded as an important inflammatory risk factor associated with cardiovascular disease.

In this trial, 27 patients maintained on haemodialysis (due to kidney failure from various causes) were randomized to receive a placebo (control) supplement containing a vegetable oil mixture lacking DHA/EPA or 2 capsules per day of a fish oil concentrate providing 488 mg DHA + 854 mg EPA (DHA/EPA combined of 1340 mg/day) for a 12-week period. Various measurements were taken at entry and after 12-weeks of supplementation with placebo or the fish oil
concentrate. Fatty acid analysis revealed a dramatic increase in the levels of DHA and EPA in the circulating plasma lipids as well as in the red blood cells as analyzed. These findings were of interest since high levels of DHA+EPA in both compartments have been associated with a lower risk of cardiovascular disease-related mortality based on previously-published population studies. Interestingly, the authors reported a significant reduction (by 24%) in the overall levels of C-reactive protein and a tendency (approaching statistical significance) for the fasting triglyceride levels to be decreased (by approximately 17% overall) with omega-3 supplementation whereas no such effects were observed in the control group. The authors indicate that this dose level of DHA/EPA omega-3 as utilized was similar to that recommended by the American Heart Association for patients with coronary heart disease and was generally well tolerated as well as efficacious for improving the aforementioned selected risk factors for cardiovascular disease and related mortality.

Dr. Holub's Comments:

The present study is of considerable interest since it is well recognized that patients maintained on haemodialysis exhibit accelerated atherosclerosis and a significantly increased risk for premature cardiovascular disease. Future long-term studies (over many years) which evaluate the effect of DHA/EPA supplementation on clinically-measured atherosclerosis (e.g., by way of angiography) will be of considerable interest. Since many studies have reported inconsistent results (some showing no effect and some showing a moderate reduction) with respect to the influence of omega-3 DHA/EPA supplementation on C-reactive protein (CRP) levels, the present finding showing a substantial reduction CRP levels in this haemodialysis patient group with relatively moderate daily intakes of omega-3 fatty acid (approximately 1.3 g/day) is therefore of considerable interest. It may be that the potential for DHA/EPA to lower C-reactive protein levels may vary considerably across different patient groups such that some sectors are more susceptible or more likely to exhibit a beneficial effect than others. If so, it would be interesting to explore the rationale for why haemodialysis patients may be greater responders to DHA/EPA supplementation in this regard. The DHA/EPA Omega-3 Institute is aware of a major ongoing trial in Canada which is evaluating the potential benefit of DHA/EPA supplementation on dialysis access and the potential improvement of dialysis shut patency rates via its anti-aggregatory, anti-proliferative, and anti-thrombotic effects. If clinical benefits in this regard are observed, supplemental fish oil as a source of DHA/EPA may find its place in routine care of the patient on haemodialysis based on its prophylactic effect against shunt thrombosis as well as the potential cardiovascular disease risk benefits as indicated in the present report from Indiana.