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Anti-inflammatory effect of Omacor during combination antiretroviral therapy: a 12-weeks randomised, double-blind, placebo-controlled trial

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Background

Pro-inflammatory changes as well as dyslipidaemia are believed to be causally implicated in the increased risk of cardiovascular events in patients with HIV infection treated with combination antiretroviral therapy. Treatment with n-3 polyunsaturated fatty acids (fish oil) is known to reduce plasma triglycerides in subjects without HIV infection, and preliminary studies have observed a moderate reduction in triglycerides in HIV infection following 8–12 weeks of supplementation with fish oil. However, the impact of n-3 fatty acids on inflammatory mediators has not previously been studied in this population.

Methods

We examined 48 patients treated with combination antiretroviral therapy. Patients were randomised to treatment with Omacor 4 g per day (2 g BID) equal to 3.6 g of omega-3 fatty acids or control for 12 weeks. Compliance was monitored by measuring the incorporation of eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) into blood neutrophils. The aim of the study was to investigate the effect of Omacor on formation of leukotriene B4 (LTB4) with very potent pro-inflammatory effects and leukotriene B5 (LTB5) from stimulated blood neutrophils at baseline and after 12 weeks of supplement. In addition, we measured highly sensitive C-reactive protein, vascular cell adhesion molecule-1 and soluble intercellular adhesion molecule-1.

Summary of Results

Following 12 weeks of treatment, EPA and DHA increased significantly in blood neutrophils in the Omacor group (n = 25), from 0.5% to 1.8% for EPA and from 1.4% to 2.0% for DHA, $p < 0.0001$, whereas no change was observed in the control group (n = 23). Formation of LTB4 decreased in the Omacor group (150 ng to 133 ng, $p = 0.0005$), whereas LTB5 increased from 4 ng to 12 ng, $p < 0.0001$. Thus, the inflammatory balance mediated by the leukotriene system, changed in a beneficial anti-inflammatory direction following Omacor supplementation, whereas no change was observed in the control group. We found no effect of Omacor treatment on the other inflammatory markers.

Conclusion

In conclusion, treatment with Omacor significantly reduced the inflammatory activity of the leukotriene system in HIV patients receiving combination antiretroviral therapy which potentially might reduce their risk of atherosclerosis and cardiovascular events.