Immunological Effects of Fish Oil on Patients with End-Stage Renal Disease

M.	Mario	Liani ^a
F.	Filippo	Salvati ^c
M.	Maria	Golato ^d
N.	Nicoletta	Fini ^c
N.	Nicola	Di Sciascio ^d
O.	Oscar	Pesa ^b
T.	Tiziana Di	Marco ^a

^aDepartment of Nephrology, ^bDepartment of Internal Medicine, San Massimo Hospital, Penne ^cDepartment of Internal Medicine, ^dDepartment of Clinical Pathology, Renzetti Hospital, Lanciano

Dott. Mario Liani, via Manzoni, 9, I-66020 San Giovanni Teatino, Chieti (Italy)

Dear Sir.

Many reports suggest that fish oil (complex of n-3 fatty acids) may exert beneficial effects on the cardiovascular system [1]. In addition, fish oil has also been found to have anti-inflammatory effects and has been used in the treatment of rheumatoid arthritis [2]. Fish oil seems to have a mild immunosuppressive effect affecting both T- and B-cell functions [3]. These effects of fish oil, so advantageous in the therapy of chronic inflammatory diseases and autoimmune diseases, could be a cause for concern when these compounds are used for longer periods of time as antiatherosclerotic drug. The aim of this study was to establish whether dietary manipulation with fish oil in patients with end-stage renal disease (ESRD) and dyslipidemic problems could have disadvantageous effects on the immune status, often altered in these patients with especially depression of the T-cell function. 10 ESRD patients were assigned to take 2 g of fish oil (Seacor, SpA, Italy) capsules daily.

Lymphocyte subpopulations were investigated with flow cytometry and monoclonal antibodies (Biorad, Italy) before and after 1 month of dietary supplementation with fish oil. Serum levels of immunoglobulins were also determined at the beginning and the end of the study. Initial values of lymphocyte sub-populations were: CD3=71.71 (SE = 2.69), CD4 = 47.85 (SE = 3.03), CD8 = 24.80 (SE = 2.22), CD4/CD8 ratio = 2.21 (SE = 0.30), CD22 = 6.92 (SE = 1.12). Immunoglobulins: IgG = 1,232.66 mg/dl, IgA = 261.33 mg/dl, IgM = 151.83 mg/dl. After fish oil supplementation: CD3 = 70.92 (SE = 2.04), CD4 = 49.07 (SE = 2.12), CD8 = 20.10 (SE = 1.83) ($p < 0.001$), CD4/CD8 ratio = 2.74 (SE = 0.31) ($p < 0.001$), CD22 = 8.59 (SE = 0.67) ($p < 0.05$), IgG = 1,245 mg/dl, IgA = 245.66 mg/dl, IgM = 135 mg/dl. These effects of fish oil in ESRD patients seem to be different from the reported effects of dietary supplementation with fish oil in normal volunteers, probably according to the different immunologic background of the uremic population compared with normal subjects.

In conclusion, these observations suggest that dietary manipulation with fish oil in ESRD patients with dyslipidemic disturbance and atherosclerotic disease is safe and perhaps with immunostimulating effects. even if more extensive trials must be designed to establish the immunological impact of such therapy for longer periods.

References

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