Effect of a Fish Oil Diet on Asthma: Results of a 1-Year Double-Blind Study

J. Dry
D. Vincent

Centre d’Allergie et Service de Médecine Interne, Hôpital Rothschild, Paris, France

Abstract

Airway inflammation is a major component of asthma. Food intake of N-3 fatty acids (FA) is associated with a low incidence of inflammatory diseases, such as asthma. We treated 12 asthmatic patients with FA and report the positive results of this 1-year double-blind study. A positive effect on forced expiratory volume in 1 s was observed after the 9 month of treatment. Our results are in favor of the use of FA, but have to be confirmed by other studies.

Correspondence to: Dr. D. Vincent, Centre d’Allergie et Service de Médecine Interne, Hôpital Rothschild, 33 Boulevard de Picpus, F-75012 Paris (France)

Asthma is a disease characterized by reversible airway obstruction and bronchopulmonary hyperreactivity, which appears to be due to (at least in part) airway inflammation [1, 2] caused by the generation of chemical mediators [1]. Epidemiological studies in populations of coastal Eskimos, Japanese and Dutch subjects have shown that a high intake of N-3 fatty acids (FA) correlates with a low incidence of inflammatory diseases, such as asthma and type I diabetes mellitus [3]. Since reports indicate a clinical benefit of FA supplementation in inflammatory disorders [4], we have performed a 1-year double-blind randomized study on FA, given in low doses to asthmatic patients. The benefit of FA supplementation was an increase in forced expiratory volume in 1 s (FEV1) after 9 months of treatment.

Twelve allergic asthmatic patients, who were routinely receiving inhaled salbutamol, steroid and sodium nedocromil therapy, were randomized into two groups and treated with either oral FA, 1 g/day of docosahexaenoic acid and eicosapentaenoic acid (Liparmony®, kindly offered by Laboratoires Ponroy, France) or with a placebo, for 1 year, in a double-blind manner. Patients were evaluated clinically every month, and pulmonary function tests were performed every 3 months.

Initially, there were no differences between the two groups in terms of age, treatment and FEV1. However, after 9 months of FA treatment, FEV1 was increased by 23% (F = 11.099; p < 0.005; two-way analysis of variance), an effect which was not observed in

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Fig. 1. Evolution of patients’ FEV₁. These 12 patients were divided into two randomized groups with ( ) and without ( ) FA. After 9 months of FA treatment, FEV₁ improved in the treated group compared to the placebo group (two-way analysis of variance; *** p < 0.005). The control group. During the study period, aerosolized treatment was not modified by FA supplementation, especially inhaled steroids. Our results indicate a positive effect of FA administered at a low dose for 1 year when assessed in terms of FEV₁. FEV₁ is not always correlated to the clinical patient’s own evaluation [5], and we have to rely on objective lung testing to determine the patient’s lung function. Other studies however [6, 7] have failed to demonstrate this type of effect, and this may be due to inappropriate dosages and too short study periods.

Asthma and FA


i.e. 10 weeks or less. Because of seasonal variations 5 and the chronicity of allergic diseases, FA treatment must be used for a long-time, completing season circle. It raises the question of the clinical tolerance of high doses of FA, since with high doses of FA, patients are living permanently in a smell of fish odor. Low doses are therefore necessary, and, indeed, our 8 treatment was perfectly well tolerated. FA have been shown to modify arachidonic acid metabolism [8, 9] and cytokines production [10], and, indeed, the efficacy of FA has been demonstrated in inflammatory illness [4, 11, 12]. Our results support these observations, although further studies are needed to confirm 10 these results and understand their mechanism of action.

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