Investigation into the plasma concentration of ω3 polyunsaturated fatty acids in Japanese attention-deficit hyperactivity disorder patients


Abstract

Several studies report that patients with attention-deficit hyperactivity disorder (ADHD) have a low plasma concentration of polyunsaturated fatty acids (PUFAs). Since fish intake varies among countries and is high in Japan, those results may not apply to Japanese patients with ADHD. However, there is currently not enough evidence to support this. We compared the plasma PUFAs levels of patients with ADHD with the standard reference levels for healthy subjects, and examined the relationship between those PUFAs levels and the subject's psychological evaluation. The subjects were 24 patients (age < 20 years) previously diagnosed with ADHD (according to the DSM-IV-TR criteria) at the psychiatric department of the Nagasaki University Hospital, between November 2010 and November 2015. The plasma concentrations of docosahexaenoic acid (DHA), eicosapentaenoic acid (EPA), and arachidonic acid (AA) were measured using gas chromatography. Data pertaining to global assessment of functioning (GAF), clinical global impressions, ADHD Rating Scale-IV, and the drug used for treatment (atomoxetine or methylphenidate) were obtained from the medical records. The plasma concentrations of DHA, EPA, and EPA/AA were significantly lower than the normal reference range, indicating that ADHD patients present an imbalance in PUFAs levels. This trend is similar to ADHD patients in other countries and replacement therapy in Japanese ADHD patients may be useful.