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[Intervention Review]

Omega-3 fatty acids supplementation for autism spectrum disorders (ASD)

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ABSTRACT

Background

It has been suggested that impairments associated with autism spectrum disorders (ASD) may be partially explained by deficits of omega-3 fatty acids, and that supplementation of these essential fatty acids may lead to improvement of symptoms.

Objectives

To review the efficacy of omega-3 fatty acids for improving core features of ASD (for example, social interaction, communication, and stereotypies) and associated symptoms.

Search methods

We searched the following databases on 2 June 2010: CENTRAL (2010, Issue 2), MEDLINE (1950 to May Week 3 2010), EMBASE (1980 to 2010 Week 21), PsycINFO (1806 to current), BIOSIS (1985 to current), CINAHL (1982 to current), Science Citation Index (1970 to current), Social Science Citation Index (1970 to current), metaRegister of Controlled Trials (20 November 2008) and ClinicalTrials.gov (10 December 2010). Dissertation Abstracts International was searched on 10 December 2008, but was no longer available to the authors or editorial base in 2010.

Selection criteria

All randomised controlled trials of omega-3 fatty acids supplementation compared to placebo in individuals with ASD.

Data collection and analysis

Three authors independently selected studies, assessed them for risk of bias and extracted relevant data. We conducted meta-analysis of the included studies for three primary outcomes (social interaction, communication, and stereotypy) and one secondary outcome (hyperactivity).

Main results

We included two trials with a total of 37 children diagnosed with ASD who were randomised into groups that received either omega-3 fatty acids supplementation or a placebo. We excluded six trials because they were either non-randomised controlled trials, did not contain a control group, or the control group did not receive a placebo. Overall, there was no evidence that omega-3 supplements had an effect on social interaction (mean difference (MD) 0.82, 95% confidence interval (CI) -2.84 to 4.48, $I^2 = 0\%$), communication (MD 0.62, 95% CI -0.89 to 2.14, $I^2 = 0\%$), stereotypy (MD 0.77, 95% CI -0.69 to 2.22, $I^2 = 8\%$), or hyperactivity (MD 3.46, 95% CI -0.79 to 7.70, $I^2 = 0\%$).

Authors' conclusions

To date there is no high quality evidence that omega-3 fatty acids supplementation is effective for improving core and associated symptoms of ASD. Given the paucity of rigorous studies in this area, there is a need for large well-conducted randomised controlled trials that examine both high and low functioning individuals with ASD, and that have longer follow-up periods.

PLAIN LANGUAGE SUMMARY**Omega-3 fatty acids for autism spectrum disorders (ASD)**

It has been suggested that difficulties associated with ASD may be explained in part by lack of omega-3 fatty acids, and that supplementation of these essential fatty acids may lead to improvement of symptoms. The purpose of this review was to assess the evidence for the effectiveness of omega-3 supplementation for core features of ASD and associated symptoms. We found only two small randomised controlled trials that evaluated omega-3 fatty acids for ASD. There is insufficient evidence that omega-3 fatty acids supplementation is an effective treatment for ASD. However, high quality large randomised controlled trials are needed before definite recommendations about this treatment can be made.