Abstract


Randomized controlled trial of vitamin D supplementation in children with autism spectrum disorder.


Department of Pediatrics, Faculty of Medicine, Assiut University, Assiut, Egypt; Department of Neuropsychiatry, Faculty of Medicine, Assiut University, Assiut, Egypt; Department of Psychiatry, College of Medicine, Almajmaah University, Riyadh, Saudi Arabia; Department of Community Health Nursing, Assiut University, Assiut, Egypt; Department of Clinical Pathology, Aswan University, Aswan, Egypt; Council for Nutritional and Environmental Medicine, Mo i Rana, Norway; Department of Pediatric Neurology and Neurorehabilitation, The First Hospital of Jilin University, Changchun, China; Department of Biosciences, College of Life and Environmental Sciences, University of Exeter, Exeter, UK; Departamento de Zoología, Facultad de Ciencias Naturales y Oceanográficas, Universidad de Concepción, Concepción, Chile; Department of Pediatrics, Qena Faculty of Medicine, South Valley University, Qena, Egypt; Department of Pharmaceutics and Industrial Pharmacy, Alazhar University, Assiut, Egypt.

BACKGROUND: Autism spectrum disorder (ASD) is a frequent developmental disorder characterized by pervasive deficits in social interaction, impairment in verbal and nonverbal communication, and stereotyped patterns of interests and activities. It has been previously reported that there is vitamin D deficiency in autistic children; however, there is a lack of randomized controlled trials of vitamin D supplementation in ASD children.

METHODS: This study is a double-blinded, randomized clinical trial (RCT) that was conducted on 109 children with ASD (85 boys and 24 girls; aged 3-10 years). The aim of this study was to assess the effects of vitamin D supplementation on the core symptoms of autism in children. ASD patients were randomized to receive vitamin D3 or placebo for 4 months. The serum levels of 25-hydroxycholecalciferol (25 (OH)D) were measured at the beginning and at the end of the study. The autism severity and social maturity of the children were assessed by the Childhood Autism Rating Scale (CARS), Aberrant Behavior Checklist (ABC), Social Responsiveness Scale (SRS), and the Autism Treatment Evaluation Checklist (ATEC).

TRIAL REGISTRATION NUMBER: UMIN-CTR Study Design: trial number: UMIN000020281.

RESULTS: Supplementation of vitamin D was well tolerated by the ASD children. The daily doses used in the therapy group was 300 IU vitamin D3/kg/day, not to exceed 5,000 IU/day. The autism symptoms of the children improved significantly, following 4-month vitamin D3 supplementation, but not in the placebo group. This study demonstrates the efficacy and tolerability of high doses of vitamin D3 in children with ASD.

CONCLUSIONS: This study is the first double-blinded RCT proving the efficacy of vitamin D3 in ASD patients. Depending on the parameters measured in the study, oral vitamin D supplementation may safely improve signs and symptoms of ASD and could be recommended for children with ASD. At this stage, this study is a single RCT with a small number of patients, and a great deal of additional wide-scale studies are needed to critically validate the efficacy of vitamin D in ASD.

PMID: 27868194