

Critical Review:

Is a gluten-free/casein-free diet effective in improving language and communication skills in individuals with Autism Spectrum Disorder?

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This critical review examined the effects of a gluten-free/casein-free (GFCF) diet on language and communication skills in individuals with Autism Spectrum Disorder (ASD). All studies included individuals diagnosed with ASD, with abnormal urine peptide levels, and who were between the ages of 2 and 22 years. 3 of the studies were randomized clinical trials, 1 was a single group design, and the last was a systematic review. Outcomes of these studies indicate mixed evidence for improvements in language and communication skills, and should be interpreted with caution due to the inherent limitations in methodology and analysis in many of the studies.

Introduction

ASD is a lifelong condition that can be characterized by deficits in the areas of social interaction, verbal and nonverbal communication, and repetitive /restricted interests and behaviors (APA, 2000). With an increasing number of individuals being diagnosed with the disorder (Fombonne, 2003) parents are anxious to find a treatment strategy. Though there is no known cure for ASD, parents have turned to alternative means in an attempt to treat the symptoms. One alternative approach includes the GFCF diet, even though research regarding its effectiveness has thus far been limited. The GFCF diet as an alternative approach in treating ASD has received a significant amount of attention over the years largely due to parent and teacher testimonials, and reports of poorly controlled studies.

Previous research has shown that individuals with ASD often times present with abnormal urinary peptide levels, suggesting insufficient break down of the peptides gluten, gliadin, and casein (Reichelt, 1981; Cade, 2000). Gluten is commonly found in wheat and other cereals and casei

direct behavioral observation. Child behaviors included initiating, responding, and intelligible words spoken. Also coded were parent initiating, responding, and expectant waiting. Data were collected at 3 points; immediately before the diet, at the end of the first dietary condition (week 6), and at completion (week 12). Another goal of the study was to evaluate the role of parent behavior and placebo effects of a GF/CF diet. Participants included 13 children diagnosed with ASD, aged 2-16 years, who were chosen by purposive sampling from the Centre for Autism and Related Disabilities and/or Child Psychiatry Services. Inclusion was based on a diagnosis of ASD according to DSM IV criteria, and a score above cut-off on each symptom domain of the Autism Diagnostic Interview Revised (ADI-R). Children were excluded from the study if their medical histories and/or physical examination indicated physical or sensory-impairment or significant medical problems. Participants were provided all meals and snacks, and parents were given a list of allowed foods in case of emergencies, and were asked to record their child's diet intake in order to monitor compliance. Nutritional adequacy was monitored, and if necessary a vitamin and/or mineral supplement was provided. For each treatment comparison, a two-sided, two sample T-test was utilized as to not ignore order.

Group data indicated no statistically significant difference between groups with the CARS, ECOS, behavioral frequencies or observed parent behaviors, even though several parents reported improvements in their children.

LIMITATIONS/LEVEL OF EVIDENCE

Statistically non-significant findings could be the effect of a small sample size, and/or large within-group variance, potentially leading to a type 2 error. The study sample was heterogeneous in terms of age, severity of autism, and cognitive abilities, which

the results of this study, this Level 1 experimental design does provide some compelling evidence for the use of a GFCF diet in terms of improving language and communication skills in individuals with ASD, especially considering the relatively long intervention period.

SINGLE GROUP DESIGN

Knivsberg et al. (1990; 1995) conducted a single group design with 15 children ranging in age from 6 to 22 years, in which urinary patterns were used to determine which diet should be followed (strictly gluten-free and milk-reduced food/ strictly milk-free and/or gluten-reduced food or a both gluten and milk free diet). Educational and psychological tests were not blind due to parent refusal. All patients were or had been students at Madlavoll School, and conformed to either the diagnosis of infantile autism or childhood onset pervasive developmental disorder. The following tests were run over the 1 year study period; the DIPAB, the C-Raven progressive matrices, the Illinois test of psycholinguistic ability, and the Tafjord observation score for play and activity. Because authors did not know if the various measures were parametrically distributed in the small number of cases studied, Wilcoxon's paired ranking was used. For correlation calculations, Spearman's rank-order correlation coefficient was used.

The DIPAB rating of bizarre behaviour revealed that before the diet 9 of 14 children scored in the psychotic group, and after the diet, all changed toward the normal spectrum (though 5 were still showing bizarre behaviour

rationalization for including/excluding the study. Inclusion criteria could have been a little more stringent as it included studies in which the treatment regime consisted not only of removal of gluten and casein from the diet, but other vitamins and allergens, as well as studies in which the diet intervention was only prescribed for a couple of days. Studies examined were discussed in a sufficient amount of detail (participants, specifics of the intervention, dependant variables, results, and certainty of evidence)

References