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Review

Eating and feeding problems and gastrointestinal dysfunction in Autism Spectrum Disorders

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ABSTRACT

Eating and feeding problems, most commonly food selectivity or picky eating, are common among children with ASD. While these behaviors are typically addressed through occupational or behavior-based therapeutic approaches, increasing evidence shows than in many cases, such eating and feeding problems may be organic and stem from some form of underlying gastrointestinal dysfunction. This review highlights the literature on eating/feeding problems in children with ASD, as well as the contributing factors to eating problems and their nutritional implications in this population. In addition, the various manifestations and origins of gastrointestinal dysfunction in ASD are included. Ten relevant studies that address eating and feeding problems and gastrointestinal (GI) symptoms and dysfunction in children with ASD and the possible mechanisms underlying the eating/feeding problems in children with ASD are discussed. This review suggests a strong relationship and significant correlations between eating problems and gastrointestinal dysfunction. Further exploration of their relationship and etiology for the development of interventions are recommended.

Contents

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1. Introduction

The recent report by the Centers for Disease Control and Prevention on the increasing prevalence of Autism Spectrum Disorders (ASD) in the United States highlights the need for a deeper understanding of the etiology of this pervasive condition. ASD is a clinically heterogeneous, multi-system disorder with a variety of comorbidities. Once considered a genetically predisposed, hardwired brain disorder, studies are beginning to show that ASD, characterized by social, communication, and behavioral impairments, is not only a whole-body, biological condition, but is affected by both genetic predisposition and environmental factors (Herbert & Arrangab, 2006; Rossignol & Frye, 2012).

One of the common symptoms of children with ASD is eating and feeding problems. A majority of children on the autistic spectrum suffer from some manifestation of food selectivity or picky eating. These behaviors are multi-factorial in origin, stemming from sensory, behavioral and social impairments, and are typically addressed through occupational or behavior-based therapeutic approaches. However, there is increasing evidence that for many children with ASD, such eating and feeding problems may be organic, stemming from underlying gastrointestinal dysfunction (GID). The increased incidence of various types of GID among this population has begun to receive wider acceptance, though previous findings on the subject were mixed. However, despite the evidence that symptoms, such as chronic diarrhea, constipation, gastro-esophageal reflux and abdominal pain, have clear relationships with eating and feeding behaviors in pediatric populations not diagnosed with ASD, the relationship between these two areas among children with ASD, to our knowledge, has yet to be synthesized. This review examines the literature on eating and feeding problems and GID among children with ASD, in an attempt to learn more about the relationships between these two conditions among this population.

We reviewed the available literature on eating and feeding problems and gastrointestinal (GI) symptoms and dysfunction in children with ASD using the following search engines: PsycNET, Pubmed and Google Scholar. Various combinations of the following search terms were used: ASD, autism, PDD-NOS, Asperger, gastrointestinal problems, constipation, diarrhea, gastrointestinal dysfunction, gastro-esophageal reflux, esophagitis, eating and feeding problems, feeding patterns, eating patterns, and food selectivity. English language studies that examined both eating/feeding problems and GID in children with ASD or a related disorder were included and the last search was performed on August 11, 2014. Ten relevant studies addressing the relationship between eating problems and GI symptoms in children with ASD were identified. A narrative review format was chosen due to the understudied nature of this subject area and the wide array of study design, which impeded the conduct of a systematic review. A discussion of the eating problems in ASD and an examination of the possible mechanisms underlying the eating/feeding problems in children with ASD is included.

2. Background

ASD is a neurodevelopmental disorder that includes a wide range of complex developmental disabilities, which, according to the DSM5, includes impaired social interaction and communication, deficits in developing and maintaining relationships, repetitive behaviors, restricted interests, ritualized behaviors, behavioral inflexibility and impaired sensory processing (American Psychiatric Association, 2013). While symptoms of ASD may appear as early as 18 months, diagnosis by age two is considered reliable and standard. In the United States today, the overall prevalence of ASD is 1 in 68 children (Centers for Disease Control and Prevention, 2014).

The etiology of ASD is yet unknown. While certain genetic syndromes, including Rett's and Fragile X, are associated with ASD, only in 6–15% of ASD cases have their genetic origins been identified (Schaefer, 2008). The cognitive and behavioral features of ASD are often thought to arise from dysfunction of the central nervous system (CNS); however many non-CNS, physiological abnormalities have been documented among this population (James et al., 2004; Lombard, 1998; Ming, Brimacombe, Chaaban, Zimmerman-Bier, & Wagner, 2008). Recent research and clinical studies have begun to identify mechanisms such as immune system dysregulation, inflammation, impaired detoxification, environmental toxicant exposures, redox regulation/oxidative stress and energy generation/mitochondrial systems, as well as nutritional disorders as influential in the development of ASD (Ming et al., 2008; Theoharides, Asadi, & Patel, 2013). Common ASD comorbidities include eating/feeding problems, sleep problems (Leyfer et al., 2006), GID (Buie, Campbell, et al., 2010), seizures and epilepsy (Gabis, Pomeroy, & Andriola, 2005), ADHD (Gargaro, Rinehart, Bradshaw, Tonge, & Sheppard, 2011), obsessive-compulsive disorder (Leyfer et al., 2006), and anxiety disorders (Leyfer et al., 2006). Two of the most common co-morbidities are eating/feeding problems and GID.

2.1. Eating/feeding problems

Eating is a natural and essential human activity necessary to support growth and sustain life, which also brings joy and pleasure (Satter, 2007). For infants, feeding is a highly complex developmental skill that matures over the first two years of life (Delaney & Arvedson, 2008). The healthy feeding relationship between a parent and child encompasses both the physiological need of the child as well as an emotional aspect of the feeding responsibility of the parent (Satter, 2005). While mealtimes can be a source of great satisfaction for both infant and parent when feeding skills are intact, problems with eating/feeding can be a potential source of significant stress for both children and parents. Furthermore, as children grow older, preoccupations with food may become compounded by psychological factors such as poor emotional development, low self-esteem and social pressures, increasing the risk of disordered eating.