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Incontinence in children with autism spectrum disorder

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Summary

Introduction
Autism spectrum disorder (ASD) and incontinence (nocturnal enuresis (NE), daytime urinary incontinence (DUI), fecal incontinence (FI)) are relevant disorders in childhood. In general, children with special needs such as intellectual disability (ID) or ASD are more often affected by incontinence than typically developing children.

Objective
In the few studies conducted on children with ASD, gastrointestinal (GI) symptoms have received more attention than NE, DUI and lower urinary tract symptoms (LUTS). The aim of the present study was to assess the prevalence of incontinence, LUTS and psychological symptoms/disorders in children with ASD compared to controls.

Study design
Forty children with ASD (12 children with infantile or childhood autism, 15 with atypical autism and 13 with Asperger's syndrome) (mean age 11.3 years) and 43 age-matched control children (mean age 10.7 years) were assessed. A questionnaire referring to incontinence and the International Consultation on Incontinence Questionnaire-Pediatric LUTS (ICIQ-CLUTS) were administered. Child psychopathology was assessed with the Child Behavior Checklist (CBCL/4–18). Child psychiatric ICD-10 diagnoses were based on a structured psychiatric interview (Kinder-DIPS).

Results
Children with ASD showed increased rates of NE (30.0% vs 0%) and DUI (25.0% vs 4.7%) compared to controls. Among children with ASD, daytime bladder control (≥5 years of age: 20.5% vs 0%) and bowel control (≥4 years of age: 42.5% vs 7.5%) were delayed compared to controls. Children with ASD had a higher LUTS score. Additionally, children with ASD were more often affected by psychological symptoms and disorders. Rates of clinically relevant externalizing symptoms (32.5% vs 0%), internalizing symptoms (67.5% vs 9.3%) and total problem score (70.0% vs 2.1%) were higher in children with ASD than the controls (see table). Children with ASD had more ICD-10 diagnoses than the controls (47.5% vs 4.7%).

Discussion
The present study showed that children with ASD are more at risk of DUI and NE than healthy controls. In addition, children with ASD had more LUTS, especially urgency and postponement, and they needed a longer time to become dry and continent. Additionally, according to the parental CBCL questionnaire, children with ASD showed higher rates of clinically relevant psychological symptoms (externalizing and internalizing symptoms), and according to the psychiatric interview, they had higher rates of comorbid psychological disorders.

Conclusion
Autism spectrum disorder is an incapacitating disorder with significant impairment in social functioning. In most cases, psychological symptoms and disorders co-occur. Additionally, children with ASD are at a greater risk of being affected by different forms of incontinence and LUTS. Therefore, screening for incontinence and, if indicated, treatment of these disorders is recommended.

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Table Rates of incontinence and psychological symptoms in children with autism spectrum disorder and controls.

	Autism spectrum disorder	Controls
	% (*N*)	% (*N*)
	100 (40)	100 (43)
Subtypes of incontinence		
Any incontinence: % (*N*)	40.0 (16)	4.7 (2)
NE: % (*N*)	30.0 (12)	—
DUI: % (*N*)	25.0 (10)	4.7 (2)
FI: % (*N*)	12.5 (5)	—
Clinically relevant CBCL score >90th percentile		
CBCL Internalizing: % (*N*)	67.5 (27)	9.3 (4)
CBCL Externalizing: % (*N*)	32.5 (13)	—
CBCL Total: % (*N*)	70.0 (28)	2.3 (1)

ASD, autism spectrum disorder; CBCL, Child Behavior Checklist; DUI, daytime urinary incontinence; FI, fecal incontinence; NE, nocturnal enuresis.

Introduction

Autism spectrum disorder (ASD) is a common neurodevelopmental disorder with prevalence around 1% of children and adults [1]. According to the Diagnostic and statistical manual of mental disorders — Fifth Edition (DSM-5), ASD is defined by persistent deficits in social communication and interaction, as well as by restricted and repetitive patterns of behavior and activities [1]. Symptoms arise from the early developmental period onwards and cause impairment in social and other areas of functioning. Autism spectrum disorder can be associated with intellectual and language impairment, as well as other disorders. The heritability is around 90%, and 15% of cases are associated with genetic syndromes.

Under the spectrum construct of DSM-5 with varying degrees of severity of ASD, previous subtypes of autism, as defined by DSM-IV [2] and ICD-10 [3], have been dropped. The most common ICD-10 subtypes were infantile or childhood autism, atypical autism and Asperger's syndrome. Childhood or infantile autism is the most impaired type of ASD manifesting before the age of 3 years. In atypical autism, an abnormal development is present only after the age of 3 years and abnormalities are not present in all areas of impairment. Asperger's syndrome is the mildest type, with no language impairment, an average or above-average IQ, but similar deficits in social interaction as children with infantile autism [3]. If one of these DSM-IV or ICD-10 diagnoses is well established in a patient, the diagnosis of ASD should be given [1].

To diagnose ASD, a full child psychiatric and pediatric assessment is needed, including a detailed history, physical and neurological examination, an intelligence or developmental test, as well as genetic, laboratory and other tests, if needed. The diagnostic Gold standard is the structured Autism Diagnostic Interview-Revised (ADI-R) [4] and the Autism Diagnostic Observation Schedule-Generic (ADOS) [5]. Coexisting behavioral, medical, genetic and functional disorders and symptoms have to be considered and diagnosed, including: nocturnal enuresis (NE), daytime urinary incontinence (DUI), fecal incontinence (FI) and constipation, according to the guidelines of the National Institute for Health and Care Excellence [6].

The International Children's Continence Society (ICCS) defines NE as intermittent wetting during sleep and DUI during daytime, occurring at least once per month in a child 5 years or older after ruling out organic causes [7]. Fecal incontinence or encopresis is defined by involuntary passing of feces at least once per month in a child 4 years or older not due to medical conditions [3].

In general, children with special needs such as intellectual disability (ID) or ASD are more often affected by NE, DUI and FI than typically developing children [8]. In the few studies on children with ASD, gastrointestinal (GI) symptoms have received more attention than NE, DUI and lower urinary tract symptoms (LUTS). In these studies, children with ASD were significantly more often affected by GI symptoms and disorders [9,10]. In a recent series of 242 patients with functional constipation or non-retentive FI aged 4—12 years, 29% had ASD symptoms, according to standardized questionnaires [11].

Additionally, the few studies assessing incontinence and comorbid psychological symptoms or disorders in children with ASD have shown increased rates of NE, DUI, FI as well as behavioral and emotional disorders [12—14].

Therefore, the aim of the present study was to assess the prevalence of different types of incontinence (NE, DUI, FI) and LUTS in children with established ASD who were referred to a tertiary outpatient department of child psychiatry, compared to controls. A second aim was to assess coexisting behavioral symptoms and disorders. It was hypothesized that children with ASD have higher rates of both incontinence and behavioral disorders.

Materials and methods

Forty children with confirmed ASD (12 (30%) children with infantile or childhood autism, 15 (37.5%) with atypical autism and 13 (32.5%) with Asperger's syndrome) were recruited consecutively from the specialized outpatient department for autism at a tertiary university center for child and adolescent psychiatry following informed consent. Exclusion criteria were intellectual disability (i.e. an intelligence quotient (IQ) < 70) and any organic type of incontinence, neurological or anatomical problems of the lower urinary tract. All children