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CO-OCCURRING GENDER DYSPHORIA AND AUTISM SPECTRUM DISORDER IN ADOLESCENCE

ABSTRACT

Adolescents with gender dysphoria have more autism spectrum disorder than in the general population. In our study, we describe gender-referred adolescents with autism spectrum disorder (n=19) and compare their adolescent development and mental health with those of gender-referred adolescents without autism spectrum disorder (n=87). The study data was collected retrospectively from 106 gender-referred Finnish adolescents whose first-line gender identity assessments had been completed by 2015. We found that the adolescents with autism spectrum disorder and gender dysphoria had more self-harm/suicidality and psychotic symptoms than the adolescents with gender dysphoria and no autism spectrum disorder. They suffered from social isolation and had fewer love and sexual experiences than adolescents with no autism. These results should be taken into account in gender identity assessment and affirmation processes to ensure that the unique needs of adolescents with autism spectrum disorder are recognised and supported.

KEY WORDS: ADOLESCENCE, AUTISM, GENDER DYSPHORIA, MENTAL HEALTH, SUICIDALITY, SELF-HARMING BEHAVIOUR

INTRODUCTION

Gender Dysphoria (GD) (1) refers to a marked difference between a person's experienced or expressed gender and the gender assigned at birth, and to a desire to live as a member of the other gender, and often a desire for hormonal and surgical treatment to make the body congruent with the experienced gender. Gender dysphoria also refers to overall anxiety and distress about one's sex characteristics (1).

One of the first estimates of the prevalence of Gender Identity Disorder (2) ranged between 1/30 000 for male to female (MtF) and 1/100 000 for female to male (FtM) in adults (3). Treatment-seeking figures suggest a prevalence of gender dysphoria of 6.8/100 000 for male to female (MtF) and 2.6/100 000 for female to male (FtM) in adults (4). Gender dysphoria/transgender identification may be more common in the general population. The prevalence of self-reported transgender identity in children, adolescents and adults ranged between 0.5-1.3% (5). In the Netherlands 0.6% of men and 0.2% of women aged 15-70 years reported incongruent gender identity and a desire to undergo sex reassignment (SR) (6). Connolly et al. 2016, in their review, concluded that among non-clinical community adolescents 0.17-1.3% identify as transgender (7). Among children, the prevalence of gender dysphoria/variance has not been reliably estimated (8,9). Adolescents in Europe and North America are increasingly seeking SR (10,11,12) and FtM applicants predominate in referrals (13,10,11,12,14).

The aetiology of gender dysphoria is unknown. It is hypothesized that gender dysphoria is a multifactorial complex trait with a heritable polygenic component and affected by biological, genetic and psychosocial factors (15,16,17). Twin studies have shown a high concordance of gender dysphoria in monozygotic twins (18), but no candidate genes have been identified. (17,19).

Leo Kanner first described autistic syndrome in 1943 (20), narrowly defined on the basis of Kanner's clinical observations of a small group of children with seriously disturbed behaviour. Since then, the understanding of autism has improved due to several studies and the definition of autism has widened to a spectrum (21,22). The diagnostic criteria have changed. According to DSM-5 (1), autism spectrum disorder (ASD) is a neurodevelopmental disorder which includes persistent deficits in social communication and social interaction across multiple contexts and restricted, repetitive patterns of behaviour, interests or activities and atypical sensory sensitivity. Symptoms usually manifest in early developmental stages, but may only manifest fully in later life when social demands exceed limited capacities, or learned coping strategies no longer suffice (1). The aetiology of autism spectrum disorder is multifactorial (23) and estimated to be 80% genetically inherited (24).

The prevalence of autism spectrum disorder is estimated to be 0.6-1% in the general population (25,22,26), with a male-to-female-ratio of 3:1-4:1 in children (27). In Sweden, the prevalence of autism spectrum disorder was found to be 2.46% among 13 to 17-year-old adolescents (28). In Finland, the prevalence of autism spectrum disorder was 8.4/1000 among 8-year-old children (29). Estimates of prevalence of autism spectrum disorder are reportedly on the increase (26). There are some suggested theories of the impact of higher parental age, especially paternal (30,31), or some environmental agents such as chemicals (32). It is not clear if the prevalence of autism has really increased or if these claims are attributable to the changed diagnostic criteria (33). In their epidemiological study, Baxter et al. showed that between 1990 and 2010 there was no clear evidence of a change in the prevalence of autism (25). In a Danish study, most of the increase of the autism prevalence was due to the changed diagnostic criteria (34). The clinical experience is that more referrals are made to child and adolescent psychiatry clinics for ASD diagnostics and treatment. One explanation is that public awareness of autism spectrum disorder traits is currently more acute and the symptoms are recognized better by caregivers, teachers, school nurses and the individuals themselves.

It has been observed clinically that sex reassignment applicants have more autism spectrum disorder than expected. In a recent review the suggested prevalence of ASD meeting the diagnostic criteria was 6-26% in transgender populations (35). It has been suggested that the prevalence of ASD in children and adolescents with gender dysphoria is 4.7% (36) and in adults 5.5% (37). Children with ASD were 7.59 times more likely to express gender variance (38). The causalities of the overlapping of GD and ASD are unknown, but several hypotheses have been evinced regarding biological, genetic, social and psychological factors (39). Male and female brains have been shown to have some structural differences, some of them due to prenatal and pubertal testosterone exposure and influenced by parental and peer socialization and by self-socialization (40). Autism spectrum disorder affects predominantly males. The extreme male brain theory (41) is one explanation model of autism, which emphasizes the impact of testosterone on the developing brain in utero. This theory could explain female-to-male GD among those individuals prenatally exposed, but it does not explain male-to female GD (39). More recent research results indicate that there are no differences in autistic symptoms between adult birth-assigned men and birth-assigned women with GD (37), and the same results concern children and adolescents (42).

There is some evidence suggesting that the brain anatomy and neuronal signalling pathways are more closely aligned with a person's perceived gender identity (17). There are some results of an association of higher birth weight with developing both autism and gender dysphoria (43). Other theories are proposed to explain the co-occurrence of ASD and GD (39): resistance to change, stereotypical behaviours, having subjects of intense interest or obsessions (44) and atypical sensory sensitivity.

DEVELOPMENT IN ADOLESCENCE

At puberty the emergence of pituitary, gonadal and adrenal hormones initiate an acceleration of physical growth and the development of secondary sex characteristics. Physiological puberty also initiates pervasive psychological and social development towards adulthood. There are several theories regarding this psychological process. According to Erikson 1965, one of the developmental tasks in adolescence is to achieve integrated identity and to avoid role confusion (45). According to Havighurst 1948, in adolescence the tasks are accepting one's body and physical changes, achieving a gender-based social role, establishing emotional independence from parents, learning occupational skills, establishing one's own perspective on moral and ideological issues and achieving a socially responsible way of acting in society (46). Identity is formed through diverse physical and psychological developmental processes in relation to other people and to the social environment (47). According to Marcia 1980, adolescents and young adults establish their identities by actively exploring and making commitments (48). Individuals with autism spectrum disorder often have difficulties in accomplishing the developmental tasks of adolescence. The development of one's gender identity is a complex process affected by many genetic, biological and psychosocial factors (49). There are several theories on the development of gender identity: gender identity is determined antenatally or through identifying or non-identifying with birth-assigned gender, or then gender identity develops over time in interaction with other people and the environment (50,51). Because of inherent challenges related to autism spectrum disorders, gender identity development as a part of overall identity development may be more challenging for ASD youth.

PSYCHIATRIC DISORDERS IN ADOLESCENCE

Many psychiatric disorders emerge in adolescence (52,53). Globally, at least 10-25% of adolescents experience mental health disorders (54). The most common psychiatric disorders in adolescence are depression, anxiety disorders, eating disorders, ADHD, conduct disorders and substance abuse disorders (55).

There is a high rate of psychiatric comorbidities in individuals with autism spectrum disorder, the most prevalent being major depression, anxiety disorders, ADHD and OCD (56,26). Several studies have claimed that a variety of psychiatric comorbidities affect individuals with gender dysphoria, most commonly depression and anxiety disorders. (10,50,57,58,59,42). Transgender adolescents are at higher risk for suicidal ideation and attempt than are cisgender adolescents (60,61). It is not known how the comorbidity of autism spectrum disorder and gender dysphoria affects mental health disorders. It is also unclear if the profile of psychiatric disorders is similar in adolescents with gender dysphoria and autism spectrum disorder to those with no autism spectrum disorder.

AIM OF THE STUDY

The aim of this study is to describe gender-referred adolescents with autism spectrum disorder, and to compare the development of their adolescence and mental health with gender-referred adolescents without autism spectrum disorder. Our study hypothesis is that autism spectrum disorder predisposes to mental health problems and exacerbates the difficulties of adolescent development compared to those gender-referred adolescents without autism spectrum disorder.

MATERIALS AND METHODS

Our study data was collected from 106 gender-referred Finnish adolescents whose first-line gender identity assessments had been completed by 2015. Data was collected retrospectively from case files into a structured data collection form eliciting age at onset of gender dysphoria (before puberty/after puberty), psychiatric comorbidities, pubertal timing, peer relationships and love and sexuality. Psychiatric comorbidities registered included whether or not the adolescents had a history of specialist-level treatment or current specialist-level treatment contact due to depression, anxiety, psychotic symptoms or psychosis, conduct problems, substance abuse problems, ADHD, each rated yes/no. Pubertal development was assessed by age at menarche or oigarche, with 11 years or younger

rated as early, normative 12-13 years and late 14 years or over. Considering peer relationships, adolescents were asked if they had been socially isolated before (yes/no) and after (yes/no) the onset of gender dysphoria, and if they had experienced bullying in primary (yes/no) and secondary (yes/no) school. Development in the domains of love and sexuality was recorded by having experienced the following: ever falling in love, going steady, kissing, petting with clothes on, petting under clothes or naked, sexual intercourse and oral sex (yes/no to each). Intelligence quotients were not measured, but no one had been diagnosed with intellectual disability.

STATISTICAL ANALYSES

The indicators of psychiatric comorbidities and adolescent development were compared between gender-referred adolescents with and without autism spectrum disorder using cross-tabulations with chi-square statistics (Fisher's exact test where appropriate). Differences at level $p<0.05$ were considered statistically significant.

RESULTS

Of the 106 adolescents, 18% (n=19) had a diagnosis of autism spectrum disorder with equal shares of assigned girls and boys. Mean (sd) age in the autism group was 16.5 (1.0) years and in the no autism group 16.9 (0.9) years, $p<0.05$. Gender dysphoria had started before puberty in 24% of adolescents with autism and in 4% of adolescents with no autism, $p=0.03$. Of adolescents with autism, 47% (9/19) had early puberty versus 35% (30/87) of adolescents with no autism, $p=0.21$. Adolescents with autism were more isolated socially and had significantly fewer love and sexual experiences (*Table 1*). All adolescents with gender dysphoria had high percentages of psychiatric comorbidities. Adolescents with autism had significantly more psychotic symptoms/psychoses than adolescents with no autism (Table 2). Adolescents with autism reported more suicidality or self-harm than did adolescents with no autism (*Table 2*).

Table 1.

Relationships	autism (n=19)	no autism (n=87)	P
Social isolation before onset of GD	59 % 9/16	30 % 25/83	0.04
Social isolation after onset of GD	67 % 12/18	46 % 38/83	0.09
Social isolation during assessment	61 % 11/18	35 % 30/85	0.04
Subject to bullying in childhood	56 % 10/18	55 % 47/85	0.60
Subject to bullying in adolescence	44 % 8/18	49 % 42/85	0.45
Has had crushes/been in love	72 % 13/18	87 % 75/86	0.11
Ever had steady relationship	33 % 6/18	71 % 61/86	0.007
Kissing	24 % 4/17	69 % 57/83	0.001
Intimate sexual contact with partner*	11 % 2/19	44 % 37/84	0.005
Traumatic sexual experiences	11 % 2/19	12 % 10/84	0.61

*petting under clothes or naked, intercourse, oral sex

Table 2.

Psychiatric comorbidities	autism (n=19)	no autism (n=87)	P
Depression	74 %	66 %	0.35
Anxiety	74 %	55 %	0.11
Suicidality/self-harm	74 %	49 %	0.05
Psychotic symptoms/psychosis	37 %	8 %	0.003
Conduct problems	11 %	13 %	0.58
Substance abuse problems	5 %	7 %	0.63
ADHD	11 %	7 %	0.44

DISCUSSION

The aim of this study was to describe adolescents with autism referred for gender identity assessment. The rate of autism spectrum disorder was significantly high among the referred adolescents with gender dysphoria. In our study 18% of adolescents with gender dysphoria also had autism spectrum disorder. This is higher than the prevalence of ASD in the general population and concurs with the suggested prevalence according to a recent meta-analysis (35). Equal shares of assigned girls and boys had autism spectrum disorder. This does not support the extreme male brain theory of autism (41), but it is in concordance with more recent studies (37,42). The testosterone exposure theory may explain the autism spectrum disorder in biological girls, but not in biological boys. It is possible that assigned girls were more active seeking referrals than assigned boys.

Gender dysphoria had started early in the autism group, more commonly than in the no autism group. This may be attributable to shared genetic background or to the effects of the core symptoms of autism spectrum disorder: deficits in social communication and social interaction, extreme and narrow interests in specific topics and tendency to rigidity regarding understanding of gender roles and gender expression.

We found that the adolescents with gender dysphoria and autism had more difficulties in adolescent development than those with gender dysphoria but no autism. They had difficulties in social relations, which are important in accomplishing the developmental tasks of adolescence, and they felt more isolated. This is entirely understandable in light of the poor social-emotional reciprocity and communicative deficits of autism spectrum disorder. They had significantly fewer steady relationships and intimate experiences than did adolescents with GD, but without ASD. Individuals with ASD may have problems in their sexual development, unusual sexual interests and restrictive and repetitive behaviours. Sensory hypo- or hyper-reactivity may negatively affect the response to closeness and intimacy. Social difficulties impair their opportunities for romantic and intimate relationships (62).

The percentage of psychiatric comorbidities, such as depression and anxiety, was high in both adolescent groups. This corroborates earlier reports of psychiatric comorbidities of ASD (56,26) and also of GD (10,50,57,58,59,42). Gender-referred adolescents diagnosed with autism spectrum disorder displayed higher rates of self-harm or suicidality than gender-referred adolescents with no autism. Difficulties in coping with emotions and affective reactions may predispose to self-harming, and these may be more likely among young people with autism. Feelings of being different and being an outsider and belonging to a minority are known risk factors for suicidality, and autism may complicate feelings of being an outsider and different beyond gender dysphoria.

The incidence of psychotic symptoms was surprisingly high. This is new information and there are no studies so far on this subject among adolescents with ASD and GD. The incidence of psychotic symptoms or psychoses was higher than expected in the whole study sample, but significantly more common among those adolescents with ASD than among those with no ASD. A common genetic background is a possibility. Another explanation could be that autistic individuals have lifetime experiences of stress, from being different from their peers, and of isolation. Their coping skills are inadequate and their way of thinking may be rigid or unusual. Impairment in social functioning and communication affect all their relationships and they may experience bullying. All these factors could be related to the risk of developing psychotic symptoms, even actual psychiatric disorders.

All in all, difficulties displayed particularly by gender-referred adolescents with autism are typical and understandable given the core features of autism spectrum disorder. Gender dysphoria is associated with a number of difficulties in domains relevant to adolescent development, but such difficulties are more common in the presence of comorbid autism spectrum disorder. Autism spectrum disorder in itself warrants attention even when an adolescent develops gender dysphoria. There is no reason to assume that gender reassignment would relieve autism-related problems.

STUDY LIMITATIONS AND STRENGTHS

The main limitation is that our study population was small. It was a clinical sample consisting of applicants referred gender identity assessment and thus does not represent all gender dysphoric adolescents. These adolescents already had a considerable number of mental health issues and concerns, and it is possible that the referral process was accelerated to find help and treatment for their suffering and that adolescents with mild or no mental health symptoms did not seek referrals. This may have caused sample bias. The strength of our study was that diagnoses were made clinically and they were reliable.

CONCLUSIONS

Adolescents with both autism spectrum disorder and gender dysphoria suffer from many debilities and psychiatric symptoms. Autism spectrum disorder should be evaluated as part of the gender identity assessment process. The difficulties of the adolescents diagnosed with autism spectrum disorder and gender dysphoria are most likely related to autism disorder symptoms, such as difficulties in social interaction and communication, difficulties in coping with their rapidly changing pubertal bodies, long-lasting feelings of being outsiders and of difference, hyper- or hypo-reactivity to sensory stimuli and difficulties in sharing intimacy with others in age-appropriate ways. The social difficulties together with depression and anxiety may also complicate identity development, including gender identity formation. Such young people may have more difficulties in verbalizing and expressing their gender identity and aspects of sexuality.

These adolescents need more time, space and support for their development, because they may have major challenges in the developmental tasks of adolescence in their daily lives. They and their families should be given psychoeducation on autism and its effects on adolescent development. These adolescents would benefit from age- and autism-specific sexual therapy. Our study findings show that adolescents with both autism spectrum disorder and gender dysphoria have comorbid psychiatric disorders, which are important to recognize, diagnose and treat appropriately. These study results related to autism spectrum disorder should be taken into account in primary healthcare, in adolescent psychiatry clinics and throughout the gender identity assessment process. Planning and carrying out the gender affirmation and medical hormonal and surgical treatment should be approached with care.

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