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Comorbidity of Asperger syndrome: a preliminary report

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Abstract

Asperger syndrome (AS) is a pervasive developmental disorder characterized by autistic social dysfunction and idiosyncratic interests in the presence of normal intelligence. There is no history of language delay. Although people with AS are known to suffer from comorbid psychiatric conditions, few studies have systematically addressed this topic. This preliminary report describes the occurrence of psychiatric disorders in a series of patients with AS diagnosed according to the ICD-10/DSM-IV criteria. Out of 35 patients (29 males and six females; mean age 15.1 years; mean verbal IQ 105.9; mean performance IQ 97.5; mean full-scale IQ 102.7), 23 patients (65%) presented with symptoms of an additional psychiatric disorder at the time of evaluation or during the 2-year follow-up. Children were most likely to suffer from attention deficit hyperactivity disorder, while depression was the most common diagnosis in adolescents and adults. The implications of these findings are discussed.

Keywords Asperger syndrome, psychiatric disorder, comorbidity

Introduction

Asperger syndrome (AS; Asperger 1944) is a type of pervasive developmental disorder (PDD) recently introduced in the ICD-10 (WHO 1993) and the DSM-IV (APA 1994). The syndrome is characterized by deficits of reciprocal social interactions of the autistic kind, subtle impairment of communication and the presence of idiosyncratic isolated interests. There is no history of language delay and intelligence is normal in AS. The criteria for any other PDD, including autism, are not met. Clumsiness is often present (Ghaziuddin & Butler 1997).

A variety of comorbid psychiatric disorders have been described in people with AS. In a series of 34 patients, Wing (1981) found that, out of the 18 patients aged over 16 years at the time of evaluation, 'four had an affective illness, four had become increasingly odd and withdrawn, probably with underlying depression, one had a psychosis with delusions and hallucinations that could not be classified, one had had an episode of catatonic stupor, one had bizarre behaviour and an unconfirmed diagnosis of schizophrenia, and two had bizarre behaviour, but no diagnosable psychiatric illness' (Wing 1981, p. 118). While several cases of depression in AS have been described (Wing 1981; Gillberg 1985), the occurrence of schizophrenia or schizophrenia-like illnesses does not appear to be common. For example, Asperger (1944) reported that only one out of his 200 cases developed schizophrenia. In their epidemiologic study of AS, Ehlers & Gillberg (1993) found that, out of the five definite cases of AS (age range 7–16 years), four met criteria for Attention

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Deficit Hyperactivity Disorder and Motor Performance Dysfunction (DAMP) and two had tics. Since the survey focused on children, information about the comorbidity of adults with AS was not provided. Despite the recent increase in interest in AS, relatively little is known about the pattern of psychiatric comorbidity of this disorder. In this report, the present authors describe the occurrence of psychiatric conditions in a consecutive series of 35 patients with AS, aged 8–51 years, diagnosed according to the operational criteria.

Method

The sample was drawn from consecutive referrals to the first author (M.G.) at the University of Michigan Medical Center, Ann Arbor, MI, USA. Subjects were diagnosed according to the ICD-10 (WHO 1993) and DSM-IV (APA 1994) criteria. In brief, all the subjects presented with autistic social dysfunction, rigid isolated interests and normal intelligence as determined by a full-scale IQ of over 70 on an individually administered test of intelligence (WISC-R, Wechsler 1974; WAIS, Wechsler 1981). Patients who had a history of language delay, defined operationally as the absence of three-word phrase speech by 3 years of age, were excluded (history of language development was based on parent reports obtained in a standardized manner at the time of initial evaluation). None of the patients met the criteria for autistic disorder. In order to increase the homogeneity of the sample, patients who could have met the criteria for autistic disorder in the past were also excluded.

Diagnosis of psychiatric disorders was based on the DSM-IV criteria (APA 1994). Psychiatric records and information from schools and social services were examined and a detailed psychiatric examination was conducted. Patients were examined at regular intervals for a period of at least 2 years by the first author (M.G.). Subsequently, eight of the subjects who were below 17 years of age were examined independently by the second author (E.W.-M.) with the help of the fourth version of the Kiddie-Schedule for Affective Disorders and Schizophrenia—Epidemiological Version (K-SADS-E, Puig-Antich *et al.* 1980). The K-SADS-E is a semi-structured interview that generates current and past Axis I diagnoses according to Research Diagnostic Criteria (RDC), DSM-III criteria and DSM-III-R criteria (APA 1987). It has been shown to possess acceptable testretest and inter-rater reliabilities (Chambers *et al.* 1985). Although there are no published instruments specifically for the assessment of psychiatric morbidity in people with autism and other PDDs, the present authors chose the above instrument based on preliminary experience at their clinic. In other cases, clinical interviews and symptom checklists based on the DSM-IV (APA 1994) were used. Information was supplemented with telephone interviews and chart reviews conducted by the second and third authors (E.W.-M. and N.G.). All available information was then discussed before reaching a consensus diagnosis. Those subjects who met the criteria for any psychiatric disorder at the time of evaluation or during the 2-year follow-up period were rated as positive for having a psychiatric illness.

Results

A total of 36 subjects were eligible for the study. One subject was excluded because of incomplete data. Therefore, the final sample consisted of 35 subjects (29 males and six females; age range = 8–51 years; mean age ±SD = 15.1 10.5 years; mean verbal IQ ±SD = 105.9 ±19.3; mean performance IQ ±SD = 97.5 ±16.6; and mean full-scale IQ ±SD = 102.7 ±18.7.

Twenty-three out of 35 subjects (65%) were rated positive for a comorbid psychiatric disorder. The two most common diagnoses were attention deficit hyperactivity disorder (ADHD) and depression (including major depression, dysthymia and bipolar disorder). Ten patients were diagnosed with ADHD, 13 with depression (eight with major depression, four with dysthymia and one with bipolar disorder), one with Tourette's syndrome, one with obsessive-compulsive disorder and one with tic disorder. Three patients had two diagnoses each (one had ADHD with major depression, one had OCD with major depression and another had tic disorder with dysthymia). None of the patients was given a diagnosis of schizophrenia.

The findings were further analysed based on two age groups: pre-adolescents (6–12 years), and

adolescents and adults (13 years and over). In those subjects aged 6–12 years (n = 20), 10 patients (50%) had a diagnosis of ADHD, four of depression, and one patient was diagnosed with both ADHD and depression. In the 13 years and over age group (n = 15), eight subjects had a diagnosis of depression, and one each of ADHD, obsessive-compulsive disorder, Tourette's syndrome and tic disorder. The diagnosis of an additional psychiatric disorder was unclear in two patients.

Discussion

Over half the patients in the present study gave a history of additional psychiatric disorder at the time of evaluation and during the follow-up period. Out of a sample of 35 patients, 23 (65%) had a positive history of comorbid psychiatric disorder, suggesting that comorbid psychiatric disorders were relatively common in this series of patients with AS. Depression and ADHD were the most common diagnoses with the former being more common in adolescents and adults and the latter in prepubertal children. From a clinical standpoint, these findings indicate that children with a diagnosis of ADHD who present with social difficulties should be carefully screened for AS, while adolescents and adults with AS should be examined for comorbid depression. Since the true rates of comorbidity can only be estimated from total population studies, it may be argued that these findings may not apply to community samples. While the possibility of a referral bias cannot be excluded, it should be noted that the referrals were made for social and communication problems, and not for mood or attentional symptoms. None of the referrals came from clinics with special interest in depression or ADHD.

The finding of a high rate of ADHD in children with AS is consistent with the results of the epidemiological study by Ehlers & Gillberg (1993). In the present study, the authors found that four out of the five definite cases of AS had comorbid ADHD. It is possible that children with AS are sometimes misdiagnosed with ADHD because of their social oddities and intrusiveness; attentional problems may sometimes be reported as social deficits by care-givers. Clinical experience suggests that people with AS are more likely to be active but odd, rather than aloof and passive. An alternative explanation for the high number of patients with ADHD is that there may be a true association between these two conditions, at least during childhood. Therefore, children with ADHD who do not respond to the usual interventions, and who suffer from social deficits, should be screened for the presence of AS. Also, since an increasing number of adults are now being diagnosed with ADHD, symptoms of AS should be looked for in patients presenting to adult ADHD clinics.

Regarding the occurrence of depression in AS, several reports have suggested that the two conditions may be related. Apart from the high incidence of depression in Wing's (1981) series reported above, several case reports have been described on this topic. For example, Gillberg (1985) described a 14-year-old girl with 'affective psychosis' and a family history of bipolar disorder. In a subsequent paper, this author pointed out the association of family history of depression and AS in his report on the neurobiological aspects of six families of AS (Gillberg 1991). One of the patients, a 40-year-old woman, was treated with lithium for mood swings. In another family, a sibling of a patient with AS had suffered from recurrent depression since the age of 7 years, while both paternal grandparents suffered from severe recurrent depressive episodes and a paternal aunt suffered from 'paranoia'; in another family, the mother of the proband with AS suffered from two episodes of major depression (Gillberg 1991). De Long & Dwyer (1988) studied first- and second-degree relatives of high-functioning autistic children for the presence of AS and proposed that bipolar disorder might be more common in families with AS. In the present study, only one patient gave a history suggestive of bipolar disorder which was in remission on mood stabilizers. If depression is indeed common in people with AS, it may be linked to difficulty in coping and the resulting social stigma, particularly experienced by patients during adolescence, or it may result from biologic or genetic factors that may, in some way, be linked to the pathogenesis of AS. For example, people with AS are said to have an overlap with those with nonverbal learning disability (NLD).

Individuals with NLD exhibit a marked tendency to social withdrawal and are at an increased risk for mood disorders (Klin *et al.* 1995). A similar mechanism may apply to people with AS as well.

Other psychiatric disorders were uncommon in the present sample. For example, although some studies have described AS with Tourette's syndrome, only one patient presented with this condition while another had a tic disorder. Some patients presented with facial grimacing without meeting the full description of Tourette's syndrome. These results are consistent with those of other studies. For example, two out of the five definite cases of AS in the Ehlers & Gillberg (1993) study suffered from tics. Kerbeshian & Burd (1986) described six cases of AS, three of whom also developed Tourette's syndrome and one who presented with tics. Berthier *et al.* (1993) examined a group of patients with AS and Tourette's syndrome. On magnetic resonance imaging, these patients had a higher incidence of structural brain abnormalities compared to patients who had only Tourette's syndrome without AS. The authors suggested that dysfunction of frontal-subcortical systems played a role in the pathophysiology of concurrent AS and Tourette's syndrome (Berthier *et al.* 1993). Kerbeshian & Burd (1986) commented on the course of development of tics in their series of patients with AS. All their patients developed tics after the diagnosis of AS was made, suggesting that this was probably a 'secondary event'. No such clear history could be obtained in the present sample. Similarly, while symptoms of anxiety were present in some of the present authors' patients, only one met the diagnosis of additional obsessive-compulsive disorder; in others, the symptoms were not clear or severe enough to merit an additional diagnosis of an anxiety disorder.

In conclusion, a high frequency of psychiatric disorders was found in this series of 35 patients with AS. Twenty-three (65%) patients had a positive history of psychiatric illness at the time of evaluation or during the 2-year follow-up period. The most common psychiatric disorders were ADHD (in the prepubertal group) and depression (in adolescents and adults). Since these results are based on a relatively small-sized clinic sample with a wide age-range, large-scale population-based studies are needed to further clarify the pattern of psychiatric comorbidity in people with Asperger syndrome.

References

American Psychiatric Association (APA) (1987) *Diagnostic and Statistical Manual for Mental Disorders,* 3rd edn, revised. APA, Washington, DC.

American Psychiatric Association (APA) (1994) *Diagnostic and Statistical Manual for Mental Disorders,* 4th edn, revised. APA, Washington, DC.

Asperger H. (1944) Die autistischen Psychopathen im Kindersalter. *Archiv für Psychiatrie und Nervenkrankheiten* **117,** 761–36.

Berthier M. L., Bayes A. & Tolosa E. S. (1993) Magnetic resonance imaging in patients with concurrent Tourette's Disorder and Asperger's syndrome. *Journal of the American Academy of Child and Adolescent Psychiatry* **32,** 633–9.

Chambers W. J., Puig-Antich J., Hirsch M., Paez P., Ambrosini P., Tabrizi M. A. & Davies M. (1985) The assessment of affective disorders in children and adolescents by semistructured interview. Test-retest reliability of the schedule for affective disorders and schizophrenia for school-age children, present episode version. *Archives of General Psychiatry* **42,** 696–702.

DeLong R. G. & Dwyer J. T. (1988) Correlation of family history with specific autistic subgroups: Asperger's syndrome and bipolar affective disease. *Journal of Autism and Developmental Disorders* **18,** 593–600.

Ehlers S. & Gillberg C. (1993) The epidemiology of Asperger syndrome. A total population study. *Journal of Child Psychology and Psychiatry* **34,** 1327–50.

Ghaziuddin M. & Butler E. (1998) Clumsiness in autism and Asperger syndrome: a further report. *Journal of Intellectual Disability Research* **42,** 43–8.

Gillberg C. (1985) Asperger's syndrome and recurrent psychosis—a case study. *Journal of Autism and Developmental disorders* **15,** 389–97.

Gillberg C. (1991) Clinical and neurobiological aspects of Asperger syndrome in six family studies. In: *Asperger Syndrome* (ed. U. Frith), pp. 122–46. Cambridge University Press, Cambridge.

Kerbeshian J. & Burd L. (1986) Asperger's syndrome and Tourette syndrome: the case of the Pinball Wizard. *British Journal of Psychiatry* **148,** 731–6.

Klin A., Volkmar F. R., Sparrow S. S., Dichetti D. V. & Rourke B. P. (1995) Validity and neuropsychological characterization of Asperger syndrome: convergence with nonverbal learning disabilities. *Journal of Child Psychology and Psychiatry* **36,** 1127–40.

Puig-Antich J., Orvaschel H., Tabrizi M. A. & Chambers W. (1980) *Schedule for Affective Disorders and Schizophrenia for School-Age Children. Epidemiologic Version (Kiddie-SADS-E)*, 3rd edn. New York State Psychiatric Institute and Yale University School of Medicine, New York, NY.

Wechsler D. (1974) *Wechsler Intelligence Scale for Children — Revised.* The Psychological Corporation, New York, NY.

Wechsler D. (1981) *Wechsler Intelligence Scale for Adults.* The Psychological Corporation, New York, NY

Wing L. (1981) Asperger's syndrome: a clinical account. *Psychological Medicine* **11**, 115–29.

World Health Organization (WHO) (1993) *International Classification of Diseases*, tenth revision, Criteria for Research. WHO, Geneva.

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