

Autistic Spectrum Disorders: Assessment and Intervention in Children and Adolescents

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Abstract

Autistic Spectrum Disorders are neurodevelopmental disorders which are classified under the label of Pervasive Developmental disorders. As many as six in every thousand children may be affected by an autistic spectrum disorder. These children exhibit impairment in communication, socialisation and restricted and repetitive interests, movements and activities. This article will discuss the distinction between autism, Asperger's Syndrome and Pervasive Developmental Disorder and give an outline of a comprehensive assessment procedure.

Assessment should include a history of the child's development, observation, school report and a profile of the child's strengths and weaknesses. However, it is important that potential differential diagnoses as well as conditions associated with autism are also considered.

Many theories about the causes of autism have been suggested, including the MMR vaccine. Recent research has suggested that there is no link between the vaccine and autism.

There is no cure for autism, but intervention and management techniques should be aimed at educating parents and carers about the disorder and behavioural interventions to aid the child's skills development.

Leo Kanner, a Boston physician, first used the word 'Autism' in 1943 when he reported on a group of children with deficits in social communication¹. Independently, in 1944, Hans Asperger, an Austrian physician, identified similar difficulties in a group of young boys². Today the term Autism is used to describe a behaviourally defined disorder that is characterised by impairments in social communication, social interaction, and problems with repetitive behaviours and narrow interests.

To receive a diagnosis of autism, a child must have shown delayed language development alongside the characteristic behavioural deficits described in Table One below. Asperger's Syndrome is used to describe children who had no such delay in acquiring spoken language, and who also have IQ's above 70. Given that early language development is the key in differentiating between these two disorders, it is not possible for a child to change their diagnosis from Autism to Asperger's regardless of their later language development and progress.

Debate exists as to whether the two conditions are distinct and it is now generally accepted that they are both part of a spectrum of disorders, hence the term Autistic Spectrum Disorders (ASD). In both the Diagnostic Statistical Manual (DSM IV)³ and International Classification of Diseases (ICD 10)⁴ Autism and Asperger's Syndrome come under the category of Pervasive Developmental Disorders. Table One shows the main characteristics of the Pervasive Developmental Disorder.

Table One: Key characteristics of the Pervasive Developmental Disorders

Autism	Deficits in sociability and empathy Deficits in communicative language Deficit in cognitive flexibility Delay with speech development Detectable before the age of 3
Asperger's Syndrome	Poor social skills, lack of insight Behavioural inflexibility, narrow range of interests IQ over 70 No delay with speech Motor clumsiness
PDD not otherwise specified	Applies to less severely affected children who do not meet the criteria for either Autism or Asperger's Syndrome

CLINICAL PRESENTATION

The main characteristics of ASD's are:

- Qualitative impairment in social interaction
- Qualitative impairment in communication
- Restrictive, repetitive and stereotyped patterns of behaviour, interests and activities

These are known as the 'triad of impairment'⁵ and deficits in all three areas must be present for a diagnosis of autism. Each part of the triad will be described, but it is important to remember

that not all children with autism will present with all of the difficulties suggested below.

Qualitative impairment in social interaction: This includes poor eye contact, poor use of gestures and facial expressions, not sharing, lack of interest in forming social relationships with peers, not joining in with group activities and an inability to recognise the effect of their behaviour on others.

Qualitative impairment in communication: This includes delay in speech, misinterpreting others use of speech such as idioms, sarcasm, jokes and taking things literally. Poor use of speech and also poor understanding of non-verbal gestures such as others' facial expressions. Limited non-verbal gestures such as pointing.

Restrictive, repetitive and stereotyped patterns of behaviour, interests and activities: Overwhelming interest in a specific topic to such an extent that the child talks about the topic excessively, becomes anxious if unable to perform a ritual or dislikes any interruption to routine and every day life. The child may also have unusual interests such as a fascination with traffic lights, telegraph poles or number plates.

About 70% of children with classic autism have IQ below 70⁸ and approximately one third will have epileptic seizures which continue into adulthood⁹.

PREVALENCE

Recent studies have found a prevalence rate of 20-40 per 10,000⁶. However if the broader phenotype is used, the prevalence may be as high as 100 per 10,000, or 1%⁷. The ratio of males to females is four to one for autism and ten to one for Asperger's Syndrome. In the last few years, epidemiological studies have suggested that the prevalence of ASD have been increasing. Possible explanations include the fact that the diagnostic criteria has broadened, as well as generally improved case recognition.

ASSOCIATED CONDITIONS

Often in children with autism there are signs and symptoms which are not readily explained by a diagnosis of autism alone. Other medical and psychiatric conditions may co-exist with autism including;

- Learning difficulties
- Epilepsy
- Speech and Language problems
- Attention Deficit / Hyperactivity Disorder (ADHD)
- Developmental Co-ordination Disorder (DCD)
- Tourette's Syndrome and Tics
- Feeding and Eating problems

This is not an exhaustive list⁸, but we will briefly consider some of the most common conditions and difficulties that a child with autism may also be diagnosed with.

Learning Difficulties: As noted above, approximately 70% of children with classic autism also have an IQ below 70 and are therefore recognised to have mild, moderate or severe learning difficulties⁹.

Epilepsy: As with learning difficulties, epilepsy is more common among children diagnosed with classic autism, with around 30% being affected into adulthood¹⁰. Epilepsy is less common among children with Asperger's Syndrome, but may be more prevalent than in typically developing children¹¹.

Speech and Language Problems: Most children with an ASD have slower language development than their peers. It is not only expressive language that may show problems, receptive language may also appear delayed in young children, and children may appear to be less responsive to their own name. Some children with autism also appear to lose words that they had previously learnt. This regression is described in approximately 25% of children with classic autism, and is usually a gradual process where a child fails to learn new words, and may stop using previously learnt words altogether¹².

ADHD: ADHD is the most common psychiatric disorder to occur alongside an ASD and there are clinical benefits from receiving a dual diagnosis¹³. Children are likely to benefit from receiving treatment aimed specifically at their ADHD symptoms, as well as having both impairments recognized by parents and teachers.

DCD: Developmental Co-ordination Disorder (or Dyspraxia) describes the motor co-ordination problems and clumsiness typical in AS. Such difficulties may benefit from intervention from an Occupational Therapist or Physiotherapist.

Tics and Tourette's syndrome: Several reports have documented the co-occurrence of tics in Asperger's Syndrome. Tourette's syndrome has also been observed in children with autism. Tics may be verbal or motor.

Feeding and Eating Problems: Problems with food including food refusal, selective eating, hoarding, pica and overeating have all been observed among children with an ASD¹⁴. Some children have difficulties coping with mixed textures, may eat their food in a certain order and may even ask for their food on different plates.

ASSESSMENT

A general assessment should cover the following areas:

- The child's developmental history.
- Observations of the child in structured and semi-structured situations¹⁵.

- Nursery/School report.
- Assessment of cognitive level.
- Assessment of problem behaviours.
- Speech and language assessment.

Audiology and visual tests if indicated. Chromosomal screen is needed if there are dysmorphic (abnormal) features.

Physical investigations may be specifically indicated in some cases including the need for an EEG, or screening for Fragile X and other chromosomal abnormalities. It is still debatable as to whether these investigations are worth performing routinely as the yield of positive results is relatively low.

Diagnostic Interviews: A number of interviews exist that help clarify the diagnosis and are also used in research. These include the Autism Diagnostic Interview¹⁶, the Diagnostic Interview for Social and Communication Disorders¹⁷, the Childhood Autism Rating Scale¹⁸ and a new computerised interview, the Developmental, Dimensional and Diagnostic Interview (3Di)¹⁹.

DIFFERENTIAL DIAGNOSES

Information from the above assessments can be used to determine the degree to which a child meets the criteria for an ASD and can also be used to exclude alternative diagnoses. The following conditions should be considered in the differential diagnosis of autism²⁰

- Learning Difficulties
- Hearing Problems
- Speech and Language Disorders
- Rett's Syndrome
- Childhood Disintegrative Disorder (Heller's Syndrome)
- Landau-Kleffner Syndrome
- Reactive Attachment Disorder

Learning Difficulties: Children with learning difficulties without an autistic spectrum disorder do not show deficits in their reciprocal social behaviour and their language development is typically in line with their overall intellectual abilities.

Hearing Problems: Fluctuating hearing loss, such as glue ear may cause children to show problems in their reciprocal communication, for example, not hearing their name being called. Some may rely on lip-reading during these times of hearing loss, and may appear to make less eye contact. However, these children are capable of making eye contact and may also use sign-based means of social interaction.

Speech and Language Disorders: Children with developmental language disorders are unlikely to show the non-verbal communication difficulties typical of children with autism. These children are also less likely to have restricted interests and repetitive behaviours.

Rett's Syndrome: Rett's Syndrome is a disorder found only in girls. Its typical onset occurs between 5 and 30 months, and is accompanied by a deceleration of head growth. It is characterised by abnormalities in language and social development, as well as a decrease in purposeful hand movements and an increase in stereotyped 'hand-washing' movements. Severe or profound intellectual difficulties are also common and epilepsy occurs in the majority of children.

Childhood Disintegrative Disorder (Heller's Syndrome): CDD is characterised by a marked loss of skills following a period of normal development for at least two years. There may also be an increased chance of epilepsy. There is no known consistent cause of CDD.

Landau-Kleffner Syndrome: Similarly to CDD, a child with Landau-Kleffner Syndrome would show typical language and cognitive development with a loss of expressive and receptive language skills and seizures consistent with a diagnosis of epilepsy. Landau-Kleffner typically occurs between three and seven years of age and two-thirds of children result in having irreversible receptive and expressive language disorder.

Reactive Attachment Disorder: RAD as a result of severe psychosocial deprivation may appear similar to autism in a number of ways. For example, children may have delayed language skills, and may show unusual social interaction and stereotyped behaviours. Early diagnosis may be difficult but once placed in an appropriate social environment, children with RAD tend to gradually develop more typical social behaviours.

AETIOLOGY AND MMR

Biological Theories: Genetics play a big role with monozygotic twins of an affected individual having autistic features in 69% of cases compared with zero percent concordance rate for dizygotic twins²¹. The genetic model is likely to be polygenic in nature with at least 3 to 5 genes responsible. No specific gene has been identified but studies have indicated susceptibility located on chromosomes 2,7, 16 and 17²².

Imaging techniques have implicated brain regions that play a part in the development of autism including those regions that are responsible for emotional and social functions, regions involving face recognition and social-cognitive systems involved in understanding the intentions of others. A recent fMRI study by DiMartino et al²³ has shown hypoperfusion in the pregenual anterior cingulate cortex in adults with autism. This region is linked to an individual's capacity to reason about the thoughts and beliefs of others, known as the theory of mind.

The neurotransmitter Serotonin (5-HT) is thought to be involved in autism²⁴. 5-HT is thought to be involved in neurodevelopment and in particular it is abundant in brain limbic areas critical for emotional expression and social behaviour.

MMR: Some parents and families of children with autism believe that the Measles/Mumps/ Rubella (MMR) vaccine caused their children's autism. These parents' beliefs and observations were reinforced by a small study of bowel disease and autism, published by Wakefield and his colleagues in 1998²⁵. The authors suggested that there was a link between the MMR vaccine and autism. However this study was seriously flawed since there was ascertainment bias, unreliable reporting of early symptoms and a lack of a clear pathogenic model.

To date there is no definite, scientific proof that any vaccine or combination of vaccines can cause autism²⁶. The British Association of Paediatricians recommends that children receive two doses of the MMR vaccine, as long as they have no known health problems that prevent the vaccine from being effective. The immunization schedules recommend that the first dose be given at age 12-to-15 months, while the second dose should be given at either four-to-six years of age or 11-to-12 years of age.

Psychological Theories: Psychological theories have failed to identify one primary deficit that could account for all the features associated with the autistic phenotype.

An interesting theory is the 'Theory of Mind' abnormality²⁷. Autistic children lack a 'theory of mind' and thus are unable to understand that another person can have thoughts, feelings and intentions.

MANAGEMENT AND INTERVENTIONS

There is no cure for autism and there is no one specific treatment that is more effective than others (For a review of psychological and educational interventions see Howlin, 1998²⁸ and Francis, 2005²⁹). However, interventions can be focussed on helping children with autism develop their skills to compensate for their communicative, cognitive and behavioural differences. Interventions need also to be targeted at parents and families to empower them to cope with their children in the most effective way.

Psychoeducation: Receiving a diagnosis of autism is a stressful event for families. The first logical step in providing intervention must be to give parents the opportunity to understand the disorder. Autism is a chronic, life-long neurodevelopmental condition and parents must learn to cope with and manage their child's behaviours, which may sometimes be distressing and confusing. Children with autism have a lack of empathy, and may not show as much warmth towards their parents as other children. They are also likely to prefer routines, and become frustrated and aggressive if their preferred routine or activity is interfered with. Some children

with autism also self-harm. Parental support groups, both national and local, can also offer a much needed source of support and reassurance.

Educational Placement: Improving the child's educational situation remains one of the most important interventions. While the policy about educational inclusion is somewhat controversial, there is currently no data available about which approach is the most effective, and so choices must be based on pragmatic considerations for the individual. It is sometimes difficult to arrange sufficient support within a mainstream environment, even with a Statement of Special Educational Needs, and so specialist placements may need to be sought. Regardless of the educational placement, structured teaching will help make the school world more comprehensible to a child with autism. The TEACHH programme^{30, 31} acknowledges the deficits associated with autism and works on structuring learning activities to capitalise on the child's strengths. For example, children with autism often have good visual processing skills, and so tasks can be structured so that the child can visualise what is expected of them. Special interests can also be used to capture and maintain interest.

Behavioural Treatment: Behavioural analysis of the child's skills is used to set specific treatment goals and to identify behavioural methods for achieving those goals. Parents as well as other professionals, including teachers and specialist tutors are trained in the implementation of programmes such as ABA (Applied Behavioural Analysis) and Lovaas³². Materials should be matched to the child's developmental level, and large tasks should be broken down into more manageable tasks to make success more likely. Modelling and reinforcement are key tools in training, helping to increase and maintain desired behaviours.

Some local services and support groups run social skills groups, which can be helpful. If there is a specific behavioural problem then it is helpful talking to a psychologist who can help the parent look more closely at possible precipitants and contributing factors.

Diet: It has been suggested that foods containing gluten and casein may play a role in the difficulties associated with autism³³. However, research in this area is scarce so far, and in a recent systematic review³⁴, only one study is considered to be adequate for inclusion³⁵. Based on urine samples, it was suggested that a diet excluding gluten and casein may result in a decrease in autistic traits such as echolalia and rigidity. While this small-scale study and anecdotal evidence may support a diet excluding gluten and casein, such diets are not without their added financial cost and inconvenience, as well as limiting food choices for the affected individual. Further good quality studies are awaited in this area.

Medication: There have been encouraging trials on the use of Risperidone for reducing aggressive and self-injurious behaviour³⁶.

PROGNOSIS

Outcome generally depends on IQ and language development. There may be improvement in language after the pre-school years. However, most individuals continue to show impairments in social skills and communication. Asperger's Syndrome is associated with a better prognosis due to a relatively greater IQ.

Behaviours and symptoms may vary over time and it is a myth that symptoms remain fixed. Many individuals will require support such help with living independently and obtaining employment. Teenagers may be particularly vulnerable to developing depression and occasionally self-injurious behaviour, particularly if bullying and teasing become a problem.

COMPETING INTERESTS

None Declared

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