

Diagnosis of ADHD

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Abstract

ADHD is a descriptive term covering a heterogeneous condition characterised by hyperactivity, impulsivity and inattention that is enduring, pervasive (occurring across different situations) and impairs function. It begins early in life, under seven years of age. It is often associated with comorbidity, including disturbed behaviour, anxiety, autism spectrum disorders, learning disability and other problems. The diagnosis should be made by an experienced, trained specialist, based on information gathered from a number of sources; it cannot be made on the basis of behavioural scales alone. Referral pathways can facilitate diagnosis and management by clarifying professional roles and responsibilities.

The diagnostic criteria

Making a diagnosis of ADHD is, at first sight, relatively straightforward. There are slightly different criteria for the diagnosis in the American DSM-IV-TR system (1) and the International Classification of Diseases (2) but general UK practice seems to be a blend of the two and recognises a pattern of six items from each of the two lists in Box 1. These must be:

- more severe than is normal for (mental) age
- evident in at least two types of situation in the individual's life, such as home and school or the workplace
- not explained by any other pathology or general developmental delay
- associated with impaired functioning.

They must also have been consistently present from the first few years of life (before age 7).

In other words there should be an enduring, pervasive, impairing pattern of severe hyperactivity, impatient, impulsive behaviour with poor concentration and self-organisation, not explained by anything else

One can quibble endlessly about the fine detail of diagnostic criteria and variations in how they are applied. That need not concern us beyond noting a couple of issues. American practice is to recognise subtypes such as inattentive or hyperactive-impulsive, indicated by a minimum of six items on either of the lists in Box 1 but this appears to be a practice little used in the UK. The WHO term 'hyperkinetic disorder' is less used than previously. It refers to a subgroup of ADHD which is more severe than 'American' ADHD. Many UK specialists will effectively use the criteria for hyperkinetic disorder (which are a little more stringent than those used in the USA) yet still refer to the diagnosis as ADHD, using the American term. This is what NICE (3) referred to as severe combined ADHD which has a prevalence rate of about 2% in childhood (4). On the other hand, American diagnostic practice recognises a milder condition with about 5-6% prevalence (5) in childhood, and about 3% in adulthood using current criteria (6).

The current diagnostic criteria are heavily orientated towards children and it is felt that the criteria for ADHD in adults should be somewhat different when DSM-IV-TR is revised. No final decision has been reached but it is widely recognised that problems with inattention and impulsivity are more evident in adult ADHD and some phenomena, such as emotional lability, become more of a concern with increasing age, while hyperactivity lessens.

Conceptual issues

NICE (3) examined the scientific evidence and concluded that ADHD is a valid concept and a 'real' disorder. Apparent controversy, particularly in the mass media, about the 'reality' of ADHD usually arises because some conceptual issues are misunderstood. There are four crucial concepts relevant to the diagnosis.

First, that it is a descriptive diagnosis, a pattern of behaviours and difficulties that is based on observation and not determined by any objective test.

Second, this pattern is at the extreme end of a distribution of behaviours present in the general population, especially among males. Put differently, ADHD is a 'spectrum' condition. The items in Box 1. which, if sufficiently numerous, pervasive enduring and impairing will lead to a diagnosis of ADHD, can readily be identified in milder form among normal people, especially boys. There is a difference in medical and social culture as far as identifying the cut-off between normal range and pathology; Europeans recognising a narrower and more severe disorder than Americans, Australians or South Africans.

Hyperactivity/impulsivity

- Fidgets
- Leaves seat when should remain seated
- Runs/climbs excessively and inappropriately
- Noisy in play
- Persistent motor overactivity unmodified by social context
- Blurts out answers before question completed
- Fails to wait turn or queue
- Interrupts others' conversations or games
- Talks excessively for social context

Inattention

- Careless with detail
- Fails to maintain attention
- Appears not to listen
- Does not finish instructed tasks
- Poor self-organisation
- Avoids tasks requiring sustained mental effort
- Loses things
- Easily distracted
- Seems forgetful

Items must be frequently manifest, excessive for mental age and clinically significant to be included

Need 6/9 from each list for combined type ADHD

Pervasiveness across situations, onset before age 7 and impaired functioning also necessary.

Box 1. Diagnostic item list for ADHD

Third, that it is heterogeneous, necessarily so, since it is arrived at by a minimal number of observable items drawn from a larger list. Selecting six, seven, eight or nine out of a list of nine elements in each of the two lists in Box 1, yields a possible 130 combinations for each list i.e. 16,900 (1302) different combinations of items. This exaggerates the issue, of course, since the items overlap somewhat in their interpretation of behaviour.

Fourth, that it is a syndrome; a profile that has various causes, usually a combination of risk factors: genetic, toxic and environmental, although the balance between these varies between individuals.

Nevertheless it is remarkable how well identification of the syndrome predicts a treatment response to specific medications and, to a lesser degree, neurological findings, prognosis and likely comorbidity.

Impairment

ADHD is necessarily associated with impaired functioning in various domains:

- life within the family as sibling, child or parent,
- work at school or place of employment
- self-control and resistance to temptation
- relationships
- self-organisation and achievement

Failure in such domains can be a source of considerable distress to parents, partners or the patients themselves. This may be because of a subjective perception of failure but there is also an obvious risk that the reasons for difficulties can be wrongly attributed by others to personal weaknesses or motivational problems which should be overcome by willpower or moral backbone. Individuals afflicted by ADHD commonly experience a stream of criticism and pointless exhortation to 'try harder'.

Commonly associated symptoms

Certain symptoms very often occur alongside ADHD without being core criteria. The most obvious is a fierce temper but others include aggressive behaviour, difficulty in learning from mistakes or ordinary discipline, poor sleep, general untidiness, poor quality relationships with others and low self-esteem.

Comorbidity

(Also see paper on ADHD comorbidity by Dr Thomas Brown in this issue.)

It is more likely than not that other conditions exist alongside ADHD. Indeed ADHD in pure form is uncommon.

These conditions include patterns of angry, aggressive behaviour. In childhood, Oppositional-defiant disorder (extreme, persistent, negative opposition to authority, often excitable, provocative and aggressive) and Conduct disorder (extreme antisocial behaviour that violates the rights of others) are very frequently associated and are often wrongly thought to be part of ADHD. If these antisocial patterns of behaviour exist alongside ADHD, referral to a specialist service is much more likely to be made, especially to a child and adolescent mental health service. In adult life, antisocial personality disorder is the equivalent association.

In childhood a range of developmental disorders are quite closely associated with ADHD. These include dyslexia, dyspraxia, dysgraphia (specific physical difficulties with handwriting), autism spectrum disorders, specific language impairment and tic disorders, including Tourette syndrome.

Anxiety is not uncommon among children with ADHD and by the late teenage years and in adult life emotional disorders such as depression or generalised anxiety disorder are increasingly evident but the strongest association in that age group is between ADHD and substance misuse: alcohol, cannabis and nicotine being very commonly abused with dependency emerging. This has not a consequence of previous or concurrent medical treatment of ADHD which may indeed be preventative.

Differential diagnosis

The pattern of inattentive, impatient restlessness seen in ADHD is not specific to it. At any age, assessment needs to exclude

- normal population variability
- immature development associated with varying degrees of intellectual disability

In childhood, those who have had

- poor quality institutional care or
- weak emotional attachment to caregivers

can show a picture hard to differentiate from ADHD symptomatology but with a rather less straightforward response to medication.

A more difficult diagnostic problem arises when there is overactive, impulsive behaviour with a refusal to comply with parental demands or school discipline which is the result of poor quality parenting or family conflict. A detailed history and observational reports can distinguish this from ADHD but it has to be remembered that disruption of parenting and family harmony can also be caused by ADHD as a primary problem, establishing a vicious circle or vicious spiral.

ADHD is quite often associated with poor quality sleep but it is also the case that poor sleep can give rise to an ADHD pattern, usually with relatively recent onset. The same is true for anxiety which may result from family tensions. Less commonly, attentional problems can be caused by short-term memory difficulties, informational processing difficulties or autism spectrum disorders.

In the classroom, inattentive restlessness can result from general or specific academic difficulties, hearing difficulty, preoccupation with family stress or bullying and disciplinary failure at home or school.

In adult life, recent onset symptoms can result from hypomania or agitated depression or from substance misuse. In none of these will there be an enduring pattern from early childhood.

Assessment

The corollary of all this is that it takes judgement and information to make a diagnosis. This particularly applies to establishing

- whether the behaviours are extreme and beyond normal variation in cultural context
- the extent of impairment
- the antecedents in early childhood
- co-existing problems
- co-existing disorder (comorbidity)
- differential diagnosis.

As part of this, questionnaires and scales completed by the patient or others are helpful but rating scales alone are not a sufficient basis for a diagnosis to be made.

Although there are a number of specific neuropsychological, neuroanatomical and neurophysiological findings that are associated with ADHD, none of these is yet sufficiently specific or practicable to form a diagnostic test in clinical practice. Descriptive or functional brain scans and EEG studies indicate positive findings (mainly understandable in terms of immature and insufficient brain development or poor frontal lobe functioning) in research studies. Yet they are not yet sufficiently well developed to be able to differentiate ADHD from normal variation or inattentive restlessness arising from other causes. No objective test can confirm or deny the existence of ADHD as things stand, although findings from psychological assessments, tests of reaction time and accuracy, and measures of mobility can contribute to a diagnostic decision.

This is an argument for specialist assessment within which information should be gathered from various sources: general practitioner, teachers or employers, parents or partners, and be supplemented by a physical and developmental assessment where appropriate. Often this is best carried out on a multidisciplinary basis, although this is not mandatory when good information from a variety of sources can be evaluated by a trained, experienced specialist.

Referral

Local referral pathways to specialists vary. In childhood and adolescence, different areas place different emphasis upon general or specialist services, paediatric or child and adolescent mental health service (CAMHS), although there will nearly always be an agreed referral pathway available from local CAMHS or child development centres. Services for adult ADHD are currently poor, but NICE has made a specific recommendation that they should be developed within adult community mental health services. Most children with suspected ADHD are referred to specialist services through educational channels and primary healthcare makes few referrals. This is seen by some (7) as a barrier to adequate service provision for children and families and thought to be because of low levels of awareness of ADHD in primary care.

GP Comment

What have I learned from this paper?

1. ADHD is a heterogeneous condition characterised by enduring, pervasive hyperactivity, impulsivity and inattention, beginning under seven years of age and not explained by another diagnosis.
2. GPs need to be aware of the importance of referring children with these characteristics to specialist services for diagnosis and treatment.
3. Most referrals for the diagnosis of possible ADHD come from parents who have been told the possibility by either pre-school or primary school teachers and request further referral to the local Child and Adolescent Mental Health Services.
4. Referral pathways can help to facilitate the process of referral and clarify the roles of professionals.
5. The transition from adolescent to Adult diagnosis ADHD requires further referral to another service which in our particular area is to the adult ADHD service at the Maudsley Hospital in London.
6. Development and resources are required to make ADHD services less of a lottery; this could be developed via new Commissioning Groups.

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