

## ADHD and Learning Disability

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### Abstract

Learning disability (mental retardation) can be defined as IQ <70 combined with impairment in social functioning. ADHD is more common in people with learning disability and the prevalence increases as the degree of learning disability increases. However, assessment of ADHD in people with learning disability can be problematic and needs to be undertaken carefully. ADHD occurs more commonly in specific syndromes associated with learning disability. It is also common in people with epilepsy, a condition which occurs more frequently in people with learning disability. Correct management of ADHD in an individual with learning disability depends on careful assessment followed by an approach that is both comprehensive and pragmatic; for example, people with learning disability may be unable or unwilling to swallow tablets, implying that a different formulation or different strategy of medication administration may be required. Despite the challenges, treating ADHD in people with learning disability can be both effective and worthwhile.

### Introduction

The diagnosis and treatment of individuals with ADHD and learning disability has lagged behind in CAMHS services and even more so in adult services. In this paper the differences in assessment and management within this population who can definitely benefit from effective treatment are briefly explored.

### Definition of Learning Disability

Learning disability is defined as a state of arrested or incomplete development of the mind, which is characterized by impairment of skills manifested during the developmental period, which contributes to the overall level of intelligence, motor, cognitive, language, adaptive, and social skills and abilities. The term generally used at present in the UK is learning disability (LD) and this equates with intellectual disability or mental retardation, the terms used more commonly outside of the United Kingdom. Educational services use the term learning difficulty which can be confusing to professionals and parents as, for example, moderate learning difficulty can include those with a borderline, mild or moderate level of LD.

The ICD 10 (1) uses the terms mild mental retardation (IQ between 50 and 69), moderate mental retardation (IQ between 35 and 49), severe mental retardation (20 to 34) and profound mental retardation (IQ below 20). The current preference is to use the term learning disability as an equivalent to mental retardation. Very few patients have a measured IQ; the level of learning disability is usually assessed based upon their level of functional skills with mobility, daily living skills, communication and social skills. This is generally estimated from their clinical presentation but it can be assessed with a well-validated tool such as the Vineland Adaptive Behaviour Scale (2) or the ABAS (3).

### Diagnostic criteria for ADHD in patients with LD.

The ICD 10 or DSM IV (4) criteria are used for diagnosis, using detailed assessment of inattention, hyperactivity and impulsivity. It is vital when assessing those with LD to establish whether these symptoms are inconsistent with the person's developmental level.

The more severe the level of disability, the less applicable many of the diagnostic criteria within ICD10 and DSM IV appear to be. For this reason the DC LD (5) diagnostic criteria for adults with LD was developed. The main differences in the criteria includes the age of onset to be as far back as 'available history'; increased emphasis on flitting and fleeting activity, lack of sustained and purposeful action, impulsivity and inability to keep still, all not attributable to severity of the learning disability.

## **Epidemiology**

The estimated prevalence of mild LD is 2-3 per cent of the population and moderate to profound LD 0.3- 0.4 per cent of the population. There are more boys than girls with special educational needs in the education system due to boys having higher rates of behavioural problems, and to a smaller degree due to X linked disorders (6).

The prevalence of ADHD in children with learning disability is higher than that in the general population (7) and it increases with increasing severity of the LD. The rates of 'hyperactivity' among young adults increases markedly with increasing levels of learning disability (8).

The prevalence of ADHD declines with age in the general adult population (9). Recent research indicates the possibility of a longer and more persistent course of the disorder in those with LD (10). This also seems to be the case with adults who have borderline or mild levels of LD where a more severe presentation and an uneven and less favourable pattern of improvement across the lifespan has been found (11).

## **Differential diagnosis**

In addition to the differential diagnoses and co-morbidities discussed in previous papers, children and adults with LD, in environments that are under-stimulating or over-stimulating, may engage in high levels of physical activities as a self-stimulatory behaviour.

Medication adverse effects such as those seen with some antiepileptic drugs may raise the suspicion of ADHD because of behavioural adverse effects (12); a review of the person's medication history in relation to the onset of symptoms can be illuminating.

It is also very important to remember that a person with learning disability may not have the level of communication to express their needs, emotions or desires resulting in behaviours such as those seen in ADHD

## **Aetiology**

The following chromosomal and genetic syndromes have all been associated with increased rates of ADHD: Fragile X, Smith-Magenis, Angelman, Prader-Willi, Turner, Williams and Cornelia de Lange syndromes (13,14).

Children who are preterm and of low birth weight have increased risk of developing hyperactivity (15). Infections during pregnancy and foetal toxins such as alcohol can cause intrauterine foetal damage, for example foetal alcohol syndrome, increasing the risk of developing ADHD (16).

Epilepsy is common in children with learning disability; the prevalence increases with the degree of learning disability. There is a high rate of ADHD features in children with epilepsy, typically estimated as being at least 20% (17).

A later age of onset or atypical progression of the symptoms indicative of ADHD can be caused by the following.

1. Neurocutaneous disorders such as neurofibromatosis and tuberous sclerosis
2. Mucopolysaccharidoses such as Sanfilippo, Hurler and Hunter syndromes.
3. Severe head trauma such as road traffic accidents, non-accidental injury and hypoxia.
4. Infective causes such as meningitis and encephalitis.

## Referral considerations

The developmental level can be assessed fairly quickly in a clinic appointment with a brief review of developmental milestones, academic skills and current self-help skills. This will be helpful in making a judgement about the degree of ADHD symptoms in relation to ability level in addition to the observation of the person during the appointment. It will also be very helpful when making decisions about referral to the most appropriate service within adult or child health services.

It can be useful to request a report from the school if the individual is of school age, as this will clarify whether the symptoms are pervasive across environments and may also give some useful guidance regarding degree of learning disability.

When a referral for assessment to secondary care is made it should include the past medical history, any known information about the pregnancy, birth and neonatal period, family or social issues and a record of all medications prescribed.

## Assessment issues

When the young person or adult is assessed in secondary care a full history with symptom onset and evidence of pervasiveness across settings, past medical and mental health history, family history, educational and social history, assessment of family relationships and for older adolescents and adults an educational and forensic history, will be completed.

A detailed assessment using an instrument such as Vineland Adaptive Behaviour Scale or ABAS, can provide clarity about the developmental level so that the assessment of ADHD is in context. A more detailed IQ assessment may be undertaken if there appears to be an uneven or “patchy” cognitive profile.

For children, an assessment of impulsivity, attention and hyperactivity may usefully include observation in school, and collation of information from school, rather than relying on symptoms seen in the clinic setting. The child can be seen in a familiar environment engaging both in activities requiring sustained mental effort and in unstructured time. It is advisable not to rely on the parent or teacher Connors scales when the child has more than mild LD as many items on these scales are not applicable to children with severe or profound learning disability who do not have speech (18). Sleep problems are common in those with learning disability (19) and sleep disturbance may be either the result of or the cause of ADHD symptoms. If sleep is disturbed, further assessment may be required.

For adults, detailed information from family members or carers will be crucial to clarify diagnostic issues. Adult ADHD scales can be difficult to interpret when there is more than a borderline or mild level of learning disability.

## Treatment Issues

On completion of assessment and diagnosis, ADHD treatment following the NICE Guidelines (20) is recommended and has been shown to be effective for those with learning disability (14). There are, however, some important treatment considerations for patients with LD, as follows.

1. The capacity of the patient to consent to assessment and treatment should be assessed whenever appropriate and all efforts should be made to enable them to communicate their wishes and preferences clearly throughout the process. This requires ample time to be allocated for this work.

2. The most crucial intervention for a person with LD and symptoms indicative of ADHD is consideration of their environment, routine, activities, communication strategies and coping skills. There also need to be consistent behavioural management strategies, following detailed analysis of the functions of their behaviour. This requires involvement from a multidisciplinary and multiagency team.

3. Regarding groups for parents and children as recommended in the NICE guidelines, unless there are specific groups for children with ADHD and LD those with mild or moderate symptoms will usually need individual management strategies.

4. For those with severe symptoms, or those who do not respond to management strategies, medication is used but individualised baseline measures of symptoms and adverse effects may need to be devised as the child or adult may have difficulty describing their symptoms. Collaboration with the education placement or day provision (with consent from the patient or family) in establishing baselines and development of a management plan can be very valuable.

5. Choice of medication may depend upon the formulation that they can swallow. Many patients with LD and younger children struggle to swallow tablets or capsules. There is no standard liquid formulation of stimulant medication, although 'special' liquid formulations are available at significant cost. It is possible to open the capsules of Medikinet and Equasym to sprinkle the slow-release beads onto food such as jam or yoghurt with breakfast. Atomoxetine is available in capsules that contain a powder. It is not advisable to open the capsule of atomoxetine as the powder is unpalatable and can cause irritation if contact is made with the eyes. It may also cause gastric irritation. However, some families try to administer atomoxetine by breaking open the capsules and attempting to disguise the taste in liquids or food; this is not an approved method of administration.

6. Careful consideration needs to be made about any associated medical problems and other medications. It may be useful to liaise with the neurologist or paediatrician if the individual is on antiepileptic medication to ensure stability of seizure control and clarity that there is no interaction between the treatment for ADHD and antiepileptic drug (e.g. methylphenidate inhibits metabolism of phenobarbitone, phenytoin and ethosuximide). It is important to monitor the seizure frequency before and after methylphenidate even though studies indicate that methylphenidate is safe to use and effective for those with epilepsy and ADHD (17). (Also see paper on ADHD and epilepsy in this issue.)

7. There needs to be a baseline assessment of sleep and appetite. Accurate height and weight for children and weight for adults should be recorded. The appropriate growth charts for specific syndromes should be used if available, for example for Down syndrome.

8. There needs to be careful monitoring of all adverse effects and thorough assessment of symptoms which may indicate adverse effects in a person with limited communication skills. For example, if a person has no speech and is spoon fed the only way they may be able to indicate that they have lost their appetite is to spit their food out, and insidious signs of depression may be indicated by reduction in daily living skills.

9. The monitoring of blood pressure and pulse rate should take place but it can be challenging to achieve accurate results in those with severe learning disability and difficult behaviours. A desensitisation programme or social stories to help them accept the monitoring regimes may be useful.

10. A more cautious introduction of medication is generally recommended for those with LD because of their vulnerability to adverse effects.

## **GP Comment.**

### **What have I learned from this paper?**

1. ADHD is more common in people with learning disability and increases in prevalence as the severity of the learning disability increases.

2. ADHD might be more likely to persist into adulthood in a person with learning disability.

3. The diagnosis of possible ADHD in a person with learning disability needs to take into account a number of confounding factors, including environment, sleep problems and medication adverse effects, all of which can result in changes that can mimic ADHD.

4. Although the diagnosis of ADHD in a person with a disability may be more difficult to make and although adverse effects of medication may be more difficult to assess, treating the ADHD with medication, as part of a comprehensive plan, can be very effective.

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