

Attention-Deficit/Hyperactivity Disorder (ADHD) in Adults — Symptoms and Treatment

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Attention Deficit Hyperactivity Disorder (ADHD) is a developmental condition of inattentiveness and easy distractibility with accompanying episodes of hyperactivity. The disease is common in children but also occurs in adults, with a prevalence of 4.4 % in the United States and 3.4 % worldwide. The disease is supposed to arise due to neurotransmitter deficiencies or brain structural changes resulting from genetic mutations or hypoxic-ischemic brain injury in the perinatal period.



Definition

Attention deficit hyperactivity disorder (ADHD) is a neurodevelopmental disorder characterized by problems of:

- Inattention
- Excessive activity; impulsiveness; restlessness
- Inappropriate behavior for the person's age
- Emotional dysregulation

All these symptoms resulting in significant functional decline.

Epidemiology

The disease is common in children with a prevalence of 8–12 % worldwide. The prevalence of adult ADHD is 4.4 % in the United States and 3.4 % internationally. About 15–20 % of the children will carry the disease into adulthood. Boys are more affected than girls with a male: female ratio of 5:1.

The prevalence is higher in people living in developed countries. It is also higher in people with other psychiatric manifestations, for instance, mood disorders, anxiety disorders, substance use disorders, and intermittent explosive disorder.

Risk factors

1. The risk of developing the disease increases with:
 - Presence of a first-degree relative who had a similar disease
 - Exposure to toxins, such as lead in pipes and paints
 - Maternal exposure to drugs, alcohol, and cigarette smoke
 - Premature birth and associated perinatal hypoxic injury

Etiology of ADHD in Adults

The exact etiology of ADHD is not known. The disease is thought to arise from exposure to risk factors mentioned above, leading to slow development of the disease. The other known associations are:

Genetics: ADHD is thought to be a familial disease. There is a 2 - 8 times increased risk of developing the disease if one of the parents is affected. The genetic mutations that are incriminated include genes that encode for dopamine receptors.

Intrauterine toxin exposure to mutation-inducing toxins and maternal cigarette smoking predisposes the fetus to increased risk of DNA mutations that cause an alteration in neurobehavioral development.

Perinatal hypoxic/ischemic brain injuries damaging the neurohormonal mechanisms of the brain can be a cause.

Classification of ADHD in Adults

Attention deficit hyperactive disorder is classified into three major subtypes:

1. **Predominantly inattentive**

The patient is inattentive to activities where a person is disorganized and veers off the tasks where he/she engages in. The main problem is a lack of focus and not defiance or incomprehension of instructions.

2. **Predominantly hyperactive/impulsive**

The patient is restless, cannot remain still, and becomes fidgety with regular tapping. The person bursts into impulses and talks a lot.

3. **Combined hyperactivity and inattentiveness**

These patients have a variety of symptoms from both inattentiveness and impulsivity.

Clinical Features

Clinically, the patients with ADHD present with the features of:

- Inability to remain still, concentrate and squirm
- Louder than expected tones and express extreme anger
- Loss of appetite
- Tics of new-onset
- Increased anxiety and depression due to episodes of low mood

Mental status examination (MSE) reveals:

- Appearance is one of a fidgety, impulsive, and restless person
- The mood may be elevated with periods of low self-esteem with alternating periods of irritability
- The thought process is usually normal but has a direction towards the goal
- Loud due to hallucinations and delusions
- Loss of concentration and short-term memory

Diagnostic Criteria

The Diagnostic and Statistical Manual of Mental illnesses (DSM-5) describes the diagnosis of ADHD by identification of **at least 6 symptoms** that should have lasted for **at least 6 months**. The symptoms that make up the criteria for each sub-type are as follows:

Predominantly inattentiveness:

- i. The person makes careless mistakes in daily activities such as schoolwork due to a lack of attention to details
- ii. Failure to sustain attention
- iii. The person does not listen to the speaker
- iv. Failure to complete tasks and follow instructions but lacks defiance, oppositional behavior, or incomprehension of the instructions
- v. Disorganized tasks and functions
- vi. The person dislikes activities that demand high levels of concentration and attention such as schoolwork
- vii. Similarly, the person is distracted easily by any form of extraneous stimuli
- viii. Forgetful on daily activities

Predominantly hyperactivity:

- i. The person gets fidgety hands and restless feet
- ii. Squirms in the seat
- iii. The person cannot remain seated for long and leaves unceremoniously or rises when he/she is expected to remain seated
- iv. Upon rising, the person runs about in a manner unexpected for his/her age or level of development
- v. The person has difficulty in engaging in activities
- vi. Uncomfortable with remaining still, especially for long periods
- vii. Excessive periods of outbursts, such as shouting out answers before the completion of the question
- viii. Excessive talking

ix. Interrupting/intruding others in their activities

Other symptoms that reinforce the diagnosis:

- Onset before 12 years of age
- The occurrence of these symptoms in two or more settings, such as school, home, or work
- Symptoms cause significant impairment of social, academic, and economic dysfunction
- The disorder may occur concurrently with another mental disorder which cannot account for all the symptoms

Investigations

The diagnosis of ADHD is made clinically on the basis of reliable history and physical examination. **It rarely requires further investigations.** A comprehensive history of the patient’s behavior by their siblings and colleagues is needed to establish the existence, frequency, and the impact of the symptoms in daily life.

A thorough medical examination to rule out medical illnesses should be done.

Differential Diagnosis

Depression	<ul style="list-style-type: none">• Due to associated low mood and problems in tolerating frustration
Anxiety	<ul style="list-style-type: none">• The condition has low mood and cannot cope with the expectation
Bipolar disorder	<ul style="list-style-type: none">• Further investigation to differentiate it from ADHD due to the associated period of low mood
Tourette syndrome	<ul style="list-style-type: none">• It can be a cause of new-onset tics
Oppositional defiant disorder	<ul style="list-style-type: none">• The inability to follow instructions can be confused with oppositional defiant disorder
Antisocial behavior	<ul style="list-style-type: none">• Due to the inability to cope with friends and the expression of violence and aggression against others

Treatment of ADHD in Adults

Treatment is mainly supportive management since the disease presents a lot of difficulties in the management. There are a few approved medications to treat ADHD and the physicians have limited experience in the diagnosis and management of ADHD.

Medical treatment:

Stimulants, such as methylphenidate, are the mainstay therapy and considered first-line drugs for the treatment of the disease. These drugs enhance the brain function and mental ability thus, they control the lack of attention and distractibility. They work by increasing the levels of dopamine and norepinephrine in the involved brain areas.

Non-stimulants, such as atomoxetine and bupropion, are considered second-line medications. They have adverse effects of cardiotoxicity and sudden death.

Psychosocial therapy:

Behavioral patient therapy (BPT) and Behavioral classroom training (BCT) methods ensure that the patient has a conducive environment to control the lack of attention and

period of outbursts. The method is very effective and should be considered as a first-line method of treatment.

Metacognitive therapy:

This enhances time management and the capability to control anxiety and depression.

Exercises and physical activity:

Engagement of ADHD patients in various activities helps them focus on activities which train the person to concentrate and avoid distractions.

Dietary modification:

Some dietary modifications have an impact on disease severity. Dietary stimulants, such as caffeine, tend to increase the occurrence of symptoms and should be avoided. Vitamin and mineral supplements have been shown to reduce the rate of symptom occurrence.

Neurofeedback mechanisms:

The patients are trained to couple their EEG waves with certain tasks and are encouraged to modulate their brain activity in certain brain areas, especially the frontal and prefrontal cortex.

Complications of ADHD in Adults

The **disease is associated with:**

1. An increased incidence of drug and substance abuse
2. The tendency to have low mood and self-esteem
3. The occurrence of suicidal and homicidal tendencies
4. More frequent accidents in childhood due to hyperactivity
5. Compromised social relations and the children become social misfits
6. Compromised education life with poor performance in school

Course and Prognosis of ADHD in Adults

Morbidity and mortality in ADHD are due to higher incidences of substance abuse which leads to suicidal tendencies.

The **presence of comorbid psychiatric conditions leads to difficulty in treatment** and chronicity of the disease. Otherwise, the disease runs a rather predictable course.

References

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