WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 8.084
Volume 11, Issue 15, 340-345. Review Article ISSN 2277– 7105

ATTENTION-DEFICIT HYPERACTIVITY DISORDER IN CHILDREN

Dr. Sandip Baliram Daberao[1], Dr. Aniruddha Patil*[2] and Dr. Anil B. Kale[3]

[1]MD (Kaumarbhritya), PhD (Sch.), Government Ayurved College, Osmanabad.

[2]Associate Professor, Department of Kaumaryabhritya (Balrog) Sant Gajanan Maharaj Ayurvedic Medical College, Mahagaon, Gadhinglaj.

[3]MD, PhD (Kaumarbhritya), HOD, Government Ayurved College, Osmanabad.

Article Received on
12 Sept. 2022,

Revised on 03 Oct. 2022,
Accepted on 24 October 2022

DOI: 10.20959/wjpr202215-26012

***Corresponding Author**
Dr. Aniruddha Patil
Associate Professor,
Department of
Kaumaryabhritya (Balrog)
Sant Gajanan Maharaj
Ayurvedic Medical College,
Mahagaon, Gadhinglaj.

ABSTRACT

Attention deficit/hyperactivity disorder (ADHD) is a behavioural disorder of children. It is the most common neurological disorder of childhood. Many of these problems are of a transient nature and often go unnoticed. However, attention deficit/hyperactivity disorder (ADHD) is a behavioural disorder of children that comprises perhaps 50% of referrals to child neurologists, behaviouralpaediatricians and child psychiatrists. It is characterized by inattention, with increased distractibility and difficulty in sustaining attention, poor impulse control, and decreased self-inhibitory capacity, as well as motor over activity and motor restlessness. The incidence of ADHD in school-going children in the West and India ranges from 5%–10%. Two to four times more boys than girls are affected. It often continues into adolescence and adulthood and can cause a lifetime of frustrated dreams and emotional pain.

KEYWORDS: ADHD, Attention deficit, Unmada.

INTRODUCTION

Attention Deficit/Hyperactivity Disorder (ADHD) is the most common childhood behavioural disorder. It is a chronic disorder which may cause impairment into adolescence and adulthood. Attention Deficit/Hyperactivity Disorder is described by the American Psychiatric Association (APA) as a pattern of inattentive and/or hyperactive-impulsive behaviour inconsistent with developmental level which interferes with functioning in educational, social or work settings. Six neuro-developmental disorders are mentioned are-

1. Communication disorder

2. Attention-Deficit Hyperactivity Disorder (ADHD)
3. Intellectual Disabilities
4. Autism Spectrum Disorder
5. Specific Learning Disorder (SLD)
6. Motor Disorders

Many of these problems are of a transient nature and often go unnoticed. However, attention deficit/hyperactivity disorder (ADHD) is a behavioural disorder of children that comprises perhaps 50% of referrals to child neurologists, behavioural paediatrician and child psychiatrists. It is characterized by inattention, with increased distractibility and difficulty in sustaining attention, poor impulse control, and decreased self-inhibitory capacity, as well as motor over activity and motor restlessness.[1,2] The incidence of ADHD in school-going children in the West and India ranges from 5%–10%.[3] Two to four times more boys than girls are affected.[4,5] It often continues into adolescence and adulthood and can cause a lifetime of frustrated dreams and emotional pain.

GENERAL SYMPTOMS

This disorder is found to be a forerunner of a number of different psychiatric conditions including mood disorders, anxiety disorders and some types of schizophrenia.[6] The symptoms of ADHD usually become evident in preschool or early years. The median age of onset of ADHD symptoms is 7 years.[7] For many individuals, ADHD symptoms improve during adolescence as age increases, but the disorder can persist into adulthood.

Symptoms of Inattention

a. **Failure of close attention** - Often fails to give close attention to details or makes careless mistakes in schoolwork, at work or during other activities
b. **Difficulty in sustaining attention** - Often has difficulty in sustaining attention in tasks or play activities.
c. **Doesn't seem to listen** - Often does not seem to listen when spoken directly (e.g. mind is elsewhere even in the absence of any obvious distraction).
d. **Doesn't follow through on instructions** - Often does not follow through on instructions and fails to finish schoolwork**.**
e. **Difficulty organising tasks/activities and dislikes, avoids oris reluctant to engage in tasks** (e.g. difficulty in keeping belongings and materials in order, disorganised work, messy).

f. **Gets easily distracted**-Is **often easily distracted** by extraneous stimuli
g. **Is forgetful and loses things -** Often **loses things** necessary for tasks or activities (e.g. books, tools, pencils, school material) and is often forgetful in daily activities.

Symptoms of Hyperactivity and Impulsivity

a. Unable to play or engage – often cannot get engage in leisure activities quietly and **leaves seat** in situations when remaining seated is expected
b. Often fidgets with or taps hands or feet or squirms in seat and **runs about or climbs** in situations where it is inappropriate**.** .
c. Talks excessively and is often 'on the go'**,** acting as if 'driven by a motor' (e.g. is unable to be or uncomfortable being still for extended time)
d. Difficulty waiting his or her turn to come and often blurts out an answer before a question has been completed
e. Often **interrupts or intrudes** on others (Child may start using things of others, without asking or without taking permission)
f. **Other symptoms** may include-

i. Difficulty in time management.
ii. Cannot plan tasks properly.
iii. Cannot regulate emotions properly.

CAUSES OF ADHD

The aetiology of ADHD is yet to be determined but current research shows that genetics plays an important role.[8] There is no one cause for ADHD and it appears to be the result of multiple genetic and environmental factors. There is consensus that the condition involves anatomical and functional dysfunction in cortico-basal ganglia / thalamo-cortical circuit of brain. In addition to genetics, scientists are studying other possible causes and risk factors including:

1. Brain injury
2. Exposure to environmental risks (e.g., lead) during pregnancy or at a young age
3. Alcohol and tobacco use during pregnancy
4. Premature delivery
5. Low birth weight

DIAGNOSIS- DSM-5 DIAGNOSTIC CRITERIA

There are three types of presentations based on nine symptoms each of inattention and hyperactivity/impulsivity as mentioned above.

- **ADHD predominantly inattentive presentation**: Children have six or more symptoms of inattention and fewer than six symptoms of hyperactivity/impulsivity.
- **ADHD predominantly hyperactivity/impulsivity presentation**: Children have six or more symptoms of hyperactivity/impulsivity and fewer than six symptoms of inattention.
- **ADHD combined presentation**: It is diagnosed when full criteria from both the lists are met.

DIFFERENTIAL DIAGNOSIS

1. Special learning disorders
2. Mood disorders
3. Sleep disorders
4. Depression
5. Anxiety
6. Rare genetic disorders e.g. tuberous sclerosis, neurofibromatosis type 1 and Turner syndrome

MANAGEMENT

Behavioural and pharmacologic interventions are used in the management of ADHD.

Pharmacologic Interventions

Psycho-stimulant drugs such as amphetamine/methylphenidate and tricyclic antidepressants (TCAs) such as imipramine and nor-tryptylline are used. The major side-effects of the methylphenidate are anorexia, insomnia, loose motions etc.[9] Whereas TCAs can cause anticholinergic side-effects such as dry mouth, constipation, sedation, mental confusion, increased appetite, weight gain, convulsions and postural hypotension etc.[10]

- **Stimulants:** Stimulants are considered first-line agents to treat ADHD. These increase the central nervous system (CNS) activity in brain. The exact mechanism of action is not known.

Ex. Amphetamines and Methylphenidate (MPH).

- **Non- Stimulants:** Non-responders or those who experience adverse effects to stimulants may be prescribed non-stimulants. These are long-acting alpha-adrenergic agonist agents which have been used as monotherapy or as an adjunctive therapy.

  Ex. Guanfacine, Clonidine, and atomoxetine

Evidence suggests that Stimulants are more effective than Non- stimulants.

Behavioural Interventions

1. Behavioural classroom management
2. Behavioural peer interventions
3. Behavioural parent training (family therapy)

AYURVEDIC LINE OF MANAGEMENT

There are no direct references of this disorder in Ayurvedic texts. Although few symptoms of *Unmāda* also mimic the symptoms of ADHD. ADHD is associated with predominance of Pittaand VataDoshaSo, plan of treatment should be to bring Vata-Pittainto normalcy. As ADHD is a neurobehavioral disorder, drugshaving the Medyapropertieslike Bramhi, Mandukparni etc. should be used. Also panchkarma therapies like sarwangaabhyanga, Shirodhara, Matrabasti should be administered.

PROGNOSIS

About 60% of children with ADHD continue to be impaired well into adult life with estimates suggesting that 4% of adults may suffer from ADHD.

CONCLUSION

Research shows the benefit of Modern drug therapy for ADHD in children, but given the poor adverse effect and drug interaction profiles, these must be dispensed with caution. There are no direct references of this disorder in Ayurvedic texts. Some scholars correlate it with *anavasthitachittatva*, this term however considers only the inattention part of the disorder. Although few symptoms of *Unmāda* also mimic the symptoms of ADHD, the latter does not have aggravation or remission phases as can be seen in *Unmāda*. Since correlation of ADHD with any single disease entity described in Ayurveda is not possible, one should consider it in terms of *doṣaprādhanya*, which can be suggested as *Vāta-pitta*. While the aggravation of *vāta* is responsible for inattention and hyperactivity, the aggravation of *pitta* leads to impulsivity. The Ayurvedic management of this disorder should be planned with *vāta pitta shāmakadravyas.*

REFERENCES

1. American Academy of Pediatrics. Clinical practice guideline: diagnosis and evaluation of the child with attention-deficit/hyperactivity disorder. American Academy of Pediatrics. *Pediatrics*, 2000; 105: 1158–70. [PubMed] [Google Scholar]
2. Diagnostic and Statistical Manual of American Psychiatric Association. 2000 [Google Scholar]
3. Malhi P, Singhi P. Spectrum of attention deficit hyperactivity disorder in children among referrals to psychology services. *Indian J. Pediatrics*, 2000; 37: 1256–60. [PubMed] [Google Scholar]
4. Wolraich ML, Hannat JN, Pinnock TY, Baumgaertal A, Brown J. Comparison of diagnostic criteria for attention deficit hyperactivity disorder in a countrywide sample. *J Am Acad Child Adolesc Psychiatry*, 1996; 35: 319–24. [PubMed] [Google Scholar]
5. National Institute of Mental Health. NIMH Research on Treatment for Attention Deficit Hyperactivity Disorder (AD/HD): The Multimodal Treatment Study-Questions and Answers. 2000 [Google Scholar]
6. Kaplan IH, Saddock JB, editors. *Comprehensive Textbook of Psychiatry/V*. 5th ed. II. New York, USA: Williams and Willkins Publications; Attention Deficit Hyperactivity Disorder-Adult Manifestations, 1998; 1782. [Google Scholar]
7. Median age of onset of ADHD. http://www.nimh.nih.gov/health/publications/the-numbers-count-mental-disorders-in-america/index.shtml#ADHD.
8. Faraone, S. V., Banaschewski, T., Coghill, D., Zheng, Y., Biederman, J., Bellgrove, M. A., Wang, Y. (2021). The World Federation of ADHD International Consensus Statement: 208 evidence-based conclusions about the disorder. Neuroscience & Biobehavioral Reviews. doi:10.1016/j.neubiorev.2021.01.022
9. Hardman J, Limbard L, editors. *Goodman and Gillman's The Pharmacological Basis of Therapeutics*. 10th ed. New York: McGraw Hill Medical Publication Division; 2001. Drugs acting on the central nervous system, 236. [Google Scholar]
10. Hardman J, Limbard L, editors. *Goodman and Gillman's The Pharmacological Basis of Therapeutics*. 10th ed. New York: McGraw Hill Medical Publication Division; Drugs acting on the central nervous system, 2001; 466. [Google Scholar]