



ADHD (ATTENTION DEFICIENT HYPERACTIVE DISORDER) IN CHILDREN AND ITS AYURVEDIC APPROACH

Deodas M. S¹, Jinal Shah²

Professor and HOD¹, PG Scholar²

Department of Kaumarbhritya, PDEA'S College of Ayurveda & Research Centre, Nigdi, Pune-44; Maharashtra, India

Corresponding Author: Jinalnshah96@gmail.com

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ABSTRACT

ADHD is a common mostly childhood neurobehavioral disorder observed in school-age children and adolescents. Lack of parent's communication, overuse of mobile phones, and newer technologies playing a major role in the development of such disease. The use of digital technology has grown so rapidly during the last couple of decades, like mobile phones, tabs, cordless phones emit radiofrequency radiation, A child's brain is too sensitive to withstand the effects of such radiation, radiofrequency emitted from them can affect the childhood brain development and this implicates on child's health in the form of neurological/ neurobehavioral diseases and hence it is important to evaluate children and adolescent for their behaviour change. This article describes the causes, treatment and preventive measures of ADHD.

Keywords: ADHD, Neurobehavioral diseases, Hyperactivity, *Shirodhara*

INTRODUCTION

The disease is characterized by poor ability to attend to a task, motoric overactivity, and impulsivity. Oppositional and aggressive behaviours are often seen in

conjunction with ADHD. Mostly seen in age group 6-16 years.

Aetiology-

1. The cause of ADHD is unknown.
2. Genetic factors as well as other factors affecting brain development during prenatal and early post-natal life are most likely responsible.
3. Late conception, mother's mental health during the pregnancy, single child, nuclear family etc may be evident for the development of such disease.
4. Growing evidence shows that children with ADHD differ from normal children on neuroimaging measures of brain structure and function. In particular, a prefrontal-striatal-thalamocortical circuit has been implicated.

- **Epidemiology -**

The prevalence of ADHD in school-aged children to be 3-5% however, estimates have ranged from as low as 1% to as high as 20%, ADHD appears more prevalent in boys. The ratio of boys to girls is approximately 4:1 in epidemiologic surveys and 9:1 in clinic samples. In adolescents, substance abuse may be co-morbid with ADHD as well.

- **Clinical manifestations -**

Afflicted children display various behaviours indicative of problems with attention (Decreased attention span), hyperactivity, and impulsivity.

According to DSM-IV,

A. Inattentiveness is manifested when a child-

- (1) Often makes careless mistakes, failing to give close attention
- (2) Often has difficulty in sustaining attention
- (3) Often does not seem to listen
- (4) Often does not follow through on tasks
- (5) Often has difficulty getting organized
- (6) Often dislikes or avoids sustained mental effort
- (7) Often loses things
- (8) Often is easily distracted and
- (9) Often is forgetful.

B. Hyperactivity is evidenced when a child

- (1) Often fidgets
- (2) Often is out of his or her seat
- (3) Runs and climbs excessively
- (4) Often has difficulty playing quietly
- (5) Is always on the go as though driven by a motor,
- (6) Often talks excessively.

C. Impulsivity is reflected in a child who,

- (1) Often blurts out the answer
- (2) Often has difficulty awaiting his or her turn and
- (3) Often interrupts or intrudes on others.

Diagnosis of ADHD requires the presence of at least six manifestations from the inattentiveness cluster, six from the hyperactivity/impulsivity cluster or both.

Clinical diagnosis requires that the symptoms be evident before age 7 yr and be constant for at least 6 months. They must be noted in at least two different settings (e.g., home and school), must exceed what would be expected for the child's developmental level and must impair the child's functioning (e.g., academic failure, social difficulty).

- **Diagnosis and differential diagnosis -**

Initial identification of many children with ADHD commonly occurs when they enter nursery or elementary school. The children are often reported as being disruptive and unresponsive to directions. Some of these same behaviours are commonly noted in children afflicted with other psychiatric disorders, therefore it is essential, as part of the diagnostic process, to obtain a detailed description of all problem behaviours exhibited by the child across specific situations and environments. Many children with ADHD appear much less affected in novel settings or when they are the focus of attention. The assessment, aside from obtaining a detailed description of the child's current behaviour, should cover events during pregnancy and delivery. Developmental milestones should be ascertained. Description of the child's temperament, reaction to separation from caregivers, and overall activity before the age of 5 should be obtained. Such information can be helpful because many parents of children afflicted with ADHD report pregnancy complications, colicky or temperamentally difficult behaviour in infancy, and overactivity from a very early age. Sleep difficulties and feeding problems have also been noted. Laboratory studies can help to rule out other disorders (e.g., Absence seizures) or conditions (e.g., Sensory deficits, Lead toxicity that may underlie symptoms of inattentiveness and overactivity medical conditions (e.g., Thyroid dysfunctions) and medicines e.g. (Phenobarbitone, Theophylline) need to be ruled out as causes of

any behavioural disturbance. Psychologic testing provides important data in the process of differential diagnosis.

Management-

1-Psychosocial	2-Interventional	3-Pharmacotherapy
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1-Psychosocial - For children afflicted with ADHD, A program should be arranged that gives structure to the child's environment which enhances their adaptive function. Such children should have a regular daily routine that they are expected to follow promptly and for which they are rewarded with praise, set a rule which is simple, clear and as few as possible. They should be coupled with firm limits enforced fairly and sympathetically through the use of concrete rewards (e.g., prizes). Overstimulation and excessive fatigue should be avoided. Time should be set aside for relaxation after play, particularly after vigorous physical activity. The period before bedtime should be quiet, with avoidance of exciting television programs and rough and tumble games. Children with ADHD should not be expected to respond well to long trips in automobiles or extensive shopping trips. Moreover, the home should be arranged so that valuable, dangerous, or breakable objects are out of the reach of these children. Parent training programs or psychoeducational interventions can be helpful. Close communication between the families, the physician and school personnel are essential. Depending on the level of disability, some children may require placement in special education classes. Family psychotherapy may be required

to help some families overcome interactional problems that hamper the implementation of structure and effective communication consistently. Multimodality therapy brings together many forms of treatment including parent training, social skills training, cognitive therapy, educational interventions, and pharmacotherapy.

2-Interventional -

- Megavitamins
- Electroencephalographic biofeedback optometric vision training
- Herbal remedies
- Dietary management (eg. restriction of refined sugar or food additives).

3-Pharmacotherapy -

A) Stimulants

B) Tricyclic antidepressants

These are effective in reducing overactivity and impulsivity and increasing attention span. As a consequence, they improve the interactions between the child and adults. However, little evidence shows that stimulants improve retention of information or control of anger. Marginal evidence suggests that stimulants significantly enhance academic performance.

A) Stimulant includes-

i) Methylphenidate – -Most commonly used stimulant. -Efficacious in 75-80% of patients -Dose -0.3-1.0 mg/kg. -Administration-2-3 weeks (20-30min before meals.)	ii) Dextroamphetamine – -Efficacious in approximately 70-75% of patients. -Dose- 0.2-0.5 mg/kg. -Administration-2-3 weeks (20-30min before meals.)	iii) Magesium Pemoline- -A longer-acting stimulant -Effective in 65-70% of Children. -It may take 2-3 wk to evaluate its efficacy fully. -An initial dose of 18.75 mg should be given and increased by one-half tablets per week as needed
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B) Tricyclic antidepressants –

i) Imipramine, Desipramine	ii) Clonidine (Catapres)	iii) Guanfacine hydrochloride (Tenex)
Effective in 60-70% Indication- Patients with comorbid tic disorders/significant symptoms of anxiety and depression.	An noradrenergic agonist, typical antihypertensive S.E-may produce hypotension	A long-acting noradrenergic agonist

• Prognosis –

Follow up studies of children with ADHD indicate that as many as 50% of these children function well in adulthood. Delinquent behaviour during adolescence and later antisocial personality disorder may be evident in as many as 50-80% of those who continue to be affected. Alcohol abuse and drug use are also quite prevalent but not related to a history of stimulant treatment. Poor outcomes are most common in children who exhibit defiance and aggression toward adults and who have poor peer relationships and below-average cognitive function.

• AYURVEDIC CONCEPT OF ADHD –

Psychological problems start when fundamental imbalances develop in the biological intelligence that

controls all bodily processes. *Vata* imbalance contributes to anxiety, fear, mental instability & insomnia. *Pitta* imbalance may give rise to anger and irritability. *Kapha* imbalance may give rise to lethargy and depression. In *Ayurveda*, neither the disease nor the symptom of ADHD is described but some references about abnormal behaviour are discussed under the feature of *Vata prakruti anavasthita chittatva*, *Mano vibhram*, *Buddhi vibhram*, *Smriti vibhram*, *Cheshta vibhram*, and *Aachar vibhram* can be correlated with ADHD. The main reason for ADHD is vitiation of *Dhee* (Rational thinking), *Driti* (retaining power of the mind), *Smriti*(memory) which causes abnormality and abnormal conduct resulting in improper contact of the senses with their objectives and give rise to inattention, hyperactivity and impulsivity.

According to Ayurveda- Samprapti Ghataka's-

Doshas-	Vata (Vyana vata), Pitta
Dushya	Rasa, Ashta manobhava
Agni	Vishamagni
Udbhavasthana	Pakwashaya
Adhishtana	Shira
Vyaktastana	Sarva sharira

Treatment modalities include-

1. Shaman aushadhi dravyas	3. Shiropichu	5. Nasya
2. Shirodhara	4. Matrabasti	6. Anya chikitsa

1) *Shaman aushadhi dravyas* - Most commonly used compounds are-

A. *Dravya* - *Shankhapushpi*, *Bramhi*, *Vacha*, *Ashwagandha*, *Jatamansi*, *Triphala*, *Bala*, *Rasna*, *Nirgundi*, *Bramhi*, *Mandukparni*, *Shankhapushi*, *Kushmand*, *Jyotishmati*, etc They increases the cognitive function, stop the degeneration of the neurons, increase memory and intellect, improves concentration and sound sleep.

B. *Ghrita*- *Kalyanak*, *Panchagavya*, *Bramhi*, *Sarasvata*, etc.

C. *Taila*- *Jyotishmati*, *Narayani*, etc.

D. *Arishta*- *Sarasvatarishta*, etc.

E. *Bhasma*- *Suvarna*, *Raupya*, etc. *Bhasmas* present in medicines enhances the quality of the drug. *Swarna bhasma* also improves memory and intellect.

F. *Manas Niyamak yoga's* (NIA Jaipur) includes- *Bramhi*, *Mandukparni*, *Shankhapushpi*, *Jatamansi*,

Vacha, Ashwagandha, vidanga, Madhuyashti, Chitraka, Pippali.

Dose-200 mg/kg/day in 2 times with milk -3 months.

2) *Shirodhara-*

Medicated oil/milk was poured over the forehead of the patient in the form of a regular stream from the specific height of about 8cm in the fixed fashion in the form of oscillatory movements i.e. to and fro movement of milk stream over the forehead of patient for 20 min daily for 2 weeks. Milk was prepared by adding *Jatamansi, musta, aamalaki, yashtimadhu churna*, it has *sheeta veerya* and *pittahara* properties. Due to *sheeta veerya*, it gives a cooling effect to the head and constricts the local blood vessels, by which it increases blood flow to the brain which in turn reduces hyperactivity and impulsivity, induce sound sleep. The drugs used here like *Amalaki* act *rasayana*. and *yashtimadhu* and *Jatamansi* are *medhya* drugs, which increases cognitive power, boost memory and help in concentration. Commonly use *taila's* for *Shirodhara/Shiropichu* are *Narayan taila, Jyotishmati, Aamalaki taladharan*, etc.

3) *Shiropichu- Vatashamanartha.*

For uncooperative/small age group children we can use another therapy instead *shirodhara* called *Shiropichu*.

For *shiropichu-Panchendriya vardhan taila* daily for 30min for 1month

4) *Nasya-* In *Ayurveda*, it is mentioned – “*Nasahi shirasodwaram*”

Ayurveda has given much importance to the brain; it is called "*Uttamanga*". The body is like an inverted tree. Its root lies in *Shira*. So, all the functions of the body are controlled through *Shira* only, and the nearest route to reach the head region is the nose, so the drug poured through nostrils reach the brain, stimulates local nerve quicker and action initiates faster. To improve the power of all *Panchendriya-Panchendriya vardhan taila (kashyap-chakshu vikar)* is recommended. Dose- *Pratimarsha Nasya* -2drops in each nostril for 7 days. The drug contains mainly *Teekshna* drugs like *Vidanga* (*Embelica ribes*), *Pippali* (*Piper longum*), *Nidigdika* (*solanum surratensa* *Burm.f.*), *Twaka* (*Cinnamomum zeylanicum* *breyn*) which are responsible for the clearing of the channels. *Vata* is

considered the controller of the mind. All the drugs are having the *Vata hara* property with *Snigdha* and *Ushna guna*. So, the pacification of the *Vata* also is playing an important role in the action of the drug. The *Madhooka* (*Madhooka indica*) and *Saindhava lavana* (*Potassium chloride*) are having *Pitahara* action. *Draksha* (*Vitis vinifera*). *Bala* (*Sida cordifolia*), *Anshumati* (*Desmodium gengeticum*), *Neelkamal* (*Nymphaea stellate*), *Manjishtha* (*Rubia cordifolia*), *Swadanshatra* (*Tribulus terrestris*), *Prapaundarika* (*Nelumbo nucifera gaeris.*) drugs have *vata pitagna* properties. The *Saindhava lavana* (*Potassium chloride*) is also having the *Sookshma* property which helps the faster penetration of the drug and faster initiation of the action. *Brihati* (*Solanum indicum* *linn.*), *Rasna* (*Pluchea lanceolata*), *Nidigdika* (*Solanum surratensa*), *Twaka* (*Cinnamomum zeylanicum*), *Til oil* (*Sesamum Indicum*) has *kapha hargna* properties.

5) *Basti chikitsa-*

Abhyanga, swedana followed by *matrabasti* with *kalyanak ghrita* for 8 days

8+8 days =16 days (2 settings with 1 month gap)

Matra basti is considered as *Ardhachikitsa* by *Charakacharya*. *Basti* is the prime treatment for *vata dosha*. Along with *vata*, it controls *pitta, kapha, rakta, sam-sargaja* and *sannipataja vyadhi*.

Basti acts on the whole body, through the gut-brain axis. It acts on the brain and helps in reducing stress, anxiety and depression. *Basti dravyas* may activate the neurohumoral transmission by stimulating the gut-brain, regulating changes in behaviour and emotions. And also, *Rajoguna* is more predominant in *ADHD/Manasavikara* and this *guna* is usually controlled by *Vata dosha*, so as the vitiation of *vata* is controlled ultimately prevention of vitiation of *Rajo guna* occurs. Hence *Basti chikitsa* must take into consideration.

Kalyanaka ghruta is described in *Ashtanga Hrudaya*, according to *Vagbhatacharya* it is *Balya, Ayushya, Mangala*, cures *Graha rogas, unmaada, Apasmara*, boost memory and intellect. *Kalyanaka ghrita* is indicated in *Unmada Prakarana* and also *Uttama matra snehapana* is advised in *Unmaada* by *Charakacharya*. So, *Kalyanaka ghrita* is given 15-20ml for each time

thrice in a day. *Ghrita* have Omega-3 and 9-essential fatty acids which are useful for cortical expansion and maturation.

6) **Anya Chikitsa- Pranayama, mantracharan**, music therapy, playing games like blocks, clay games, drawing, colouring, and painting may be helpful to improve their attention span and most importantly strict avoidance of the use of electronic gadgets is advisable.

DISCUSSION

While analyzing the causative factors of ADHD in the child the role of the antenatal status of the mother has to be scrutinized, as *Ayurveda* believes that the factors influencing pregnancy will affect the baby in terms of physical, psychological or both if psychological factors during the antenatal period get disturbed it will ultimately affect the foetus and thus results are seen in the child in forms of psychological and neuro-behavioral disorders. The pathology of ADHD is not clear in the contemporary system of medicine other than the neurobehavioral outlook. In *Ayurveda*, any disease is said to have a root at mental, physical or both phases. In the case of most of the diseases, the aetiology and the symptomatology are psychosomatic. As explained in *Ayurveda*, both the mind and body are led by *tridoshas* and the vitiation of these *dosha* will cause abnormality of both psyche and body. The role of *Ayurvedic* treatment in ADHD is based upon the main *Dosha* involvement, while doing so, maintenance of *Agni* (digestive fire/ metabolism) was taken care of first as without proper metabolism pharmacological actions of the drugs cannot be expected.

CONCLUSION

The role and importance of Ayurvedic modalities in such neurobehavioral diseases have been clearly understood, instead of using only *shaman-aushadhi's*, *shaman aushadhi's* along with *Shirodhara* helps in treating the disease from its root cause, reduces the symptoms and increases attention span.

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