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Contribution of Ayurveda for Management of Adhd (Attention Deficit Hyperactivity Disorder): A Case Report

Punam Sawarkar

Department of Panchakarma, Mahatma Gandhi Ayurved College Hospital and Research Centre, Salod, Datta Meghe Institute of Medical Sciences (DMIMS), Wardha, Maharashtra, India

Shilpa Yerne

Department of Kriyasharir, SGR Ayurved College, Solapur, Maharashtra India

Manju Mohan

Department of Panchakarma, Om Ayurvedic Medical College & Hospital, Betul, Madhya Pradesh, India

Gaurav Sawarkar

Department of Rachana Sharir, Mahatma Gandhi Ayurved College Hospital and Research Centre, Salod(H), Datta Meghe Institute of Medical Sciences (DMIMS), Wardha, Maharashtra, India

Abstract---Background: Attention deficit hyperactive disorder (ADHD) is one of the commonest neurobehavioral disorders of childhood, affecting social, learning, and behavioral abilities with a prevalence rate in India of 1.3 per 1000. In Ayurveda, specific mental clinical conditions associated with psychiatric and behavioral disturbances are elaborated under the term “*Unmada*.” The *Unmada* is such a condition compromising particular emotional, behavioral, psychological, and physical features. Attention Deficit Hyperactivity Disorder (ADHD) is a neurobehavioral disorder of childhood that mostly occurs in school-going children. Hyperactivity and inattention are the common clinical features of this disease. Both these symptoms are already narrated in ‘*Unmada*’ mentioned in Ayurveda. Its prognosis is *Sadhya* (Curable) by treating it with internal medications and various therapeutic procedures. Ayurveda suggests the treatment protocols, *Snehana* (Oleation), *Swedana* (Sudation), *Shodhana* (Purificatory) procedures like *Vamana* (Emesis), *Virechana* (Purgation), *Basti* (Medicated enema), *Nasya*, *Dhumapana* (Medicated smoke), *Anjana* (Collyrium application), *Abhyanga* (Massage), *Lepa* (External application), *Parisheka* (Oil bath) also *Shaman Chikitsa* (Internal

medication). This case study aimed to assess the efficacy of Ayurvedic management for the management of ADHD. Nine years old male child presented with their parents at Ayurvedic hospital with complaints of hyperactivity, unable to speak properly, lack of concentration, recurrent anger.

Keywords---ADHD, Kashaya Basti, Matrabasti, Nasya, Unmada, Utsadana.

Introduction

Attention deficit hyperactive disorder (ADHD) is one of the commonest neurobehavioral disorders of childhood, affecting social, learning, and behavioral abilities, with a prevalence rate in India of 1.3 per 1000. The prevalence rate of ADHD in India is more than the global rate, i.e., at 11.32%, as per a study conducted in Coimbatore [1]. It is highly prevalent in children between ages 9 -10, i.e.25-26.4%. Its prevalence is higher, i.e. (66.7%) in male children than in female children. Poor academic performance due to difficulties while reading, writing, and behavioral problem are common issues in children who have ADHD. The characteristic features of the disease are inattention, including increased distractibility, poor impulse control, and hyperactivity. Affected children may commonly experience underachievement in academics and difficulties with interpersonal relationships. Multiple factors are said to be responsible for ADHD. A strong genetic component plays an important role that results in the progression of the disease. The child's mother with ADHD may have a history of birth complications such as prolonged labor, toxemia, and complicated delivery. Drug abuse and the addiction of mothers are also being recognized as risk factors [2].

Various food coloring agents and preservatives have been related to hyperactivity in previously hyperactive children. The subsequent onset of impulsivity and inattention symptoms can be due to abnormal brain structure and traumatic brain injury [3]. DSM V criteria are considered to be the criteria of diagnosis for ADHD [4]. According to this, the suffering child should have more than six symptoms of a particular type. ADHD has three subtypes: predominantly inattentive type, common in females, which often includes cognitive impairment. The other two types commonly diagnosed in males are hyperactive-impulsive type and combined type. The symptoms may vary according to age. These include motor restlessness, aggressive and disrupting behavior, which are frequently seen in preschool children, while inattentive, distractible, and disorganized symptoms are more typical in older adolescents. Presynaptic dopaminergic agonists, commonly called psychostimulants medication, are the choice of drug for treating ADHD. Increased risk of adverse cardiovascular events, including sudden cardiac death, myocardial infarction, and stroke in young adults, rarely in children, may be associated with stimulant drugs used to treat the disease [5].

Ayurveda explains almost all the psychiatric and behavioral disorders under Unmada and Apasmara. Unmada is a disease featured by unstable intellect, mind, knowledge, memory, consciousness, inclination, and poor conduct of poor

conduct and bad manners [6]. It is an obsession in cowardly and weak-minded individuals resulting from an imbalance of *Tridosha* (three-body humor) residing in mind caused [7]. The etiological factors consist of intake of unhygienic, improperly processed, incompatible diet and irregular dietetic habits. It is also mentioned that inappropriate physical activities by a very weak person and psychological disturbances caused due to over consciousness about illness, emotional instability like excessive anger, grief, irritability, fear, etc., result in the decline of balanced psychological functions in a person. *Satwa Guna* (quality of mind which is a symbol of positivity) tend to decrease in the person due to the above factors resulting in *Tridosha* (Three bodily humors) getting localized in *Hridaya* (Heart/Mental faculty), causing diminished functioning mental faculty and finally causing *Unmada* [8]. Due to loss of intellect, knowledge, and memory, the person does not experience happiness and sorrow [7]. There are five types of *Unmada* [10]. Its prognosis is said to be *Sadhya* (Curable) with the help of internal medications along with various therapeutic procedures. Broad treatment protocol in the form of *Snehana* (Oleation), *Swedana* (Sudation), *Shodhana* (Purificatory) procedures like *Vamana* (Emesis), *Virechana* (Purgation), *Basti* (Medicated enema), *Nasya*, *Dhumapana* (Medicated smoke), *Anjana* (Collyrium application), *Abhyanga* (Massage), *Lepa* (External application), *Parisheka* (Oil bath) also *Shamana Chikitsa* (Internal medication) is described by Ayurveda in the management of this mental disorder [9]. The present case was an attempt to study the role of the Ayurveda line of management in a case of ADHD, which was diagnosed as *Pittaja Unmada* in Ayurveda.

Patient's information

Nine-year-old male child presented with their parents at Mahatma Gandhi Ayurved Medical College Hospital and Research Centre, Salod (H), Wardha, Maharashtra, with the complaints mentioned in table no.1 for three years. The chief complaints of the patient are tabulated in table no.1.

Progression of disease

As reported by the parents, the child was normal till three years of age. Gradually they noticed some behavioral disturbance in their child. The parents were not worried first as it was natural for a child of that age. But as time progressed, his condition worsened. The child was joined to school later; he could not sit for a long duration, he made many excuses for not to go to school. So, he was not regular to school, and his performance was also less than average at school. Later the parents noticed that sometimes while playing with friends or at home, he suddenly became hyperactive and started throwing objects and hitting himself. The child began to react violently, even for silly reasons. Later he developed poor eye contact with no interactive play. For all the above complaints, they consulted a doctor in Nagpur in 2018, and he was diagnosed with ADHD (Attention deficit hyperactive disorder), and he was under medication. After medication, parents noticed some changes in the behavior of their child. But they were not satisfied with the results, so they consulted our hospital for further management.

History of the patient

The detailed history of the patient is given as follows:

- Family history: Parents are healthy. No specific significant family history related to ADHD was found.
- Past history: There is no significant past history.
- Personal history:
 - *Ahara* – Vegetarian diet, dominant in *Madhura Rasa* (Sweet Diet), thrice daily
 - Appetite – Reduced
 - *Nidra* –Disturbed sleep, 1-2 hours/day, 5-6 hours/ night often cry at night and evening
 - *Vyasana* – Nil
 - *Vyayama* – Nil
- Immunization history: -All vaccines are given according to the national immunization schedule till the age
- Prenatal history: - The prenatal history denies consanguinity of parents, Hypertension, Gestational diabetes, hyperemesis, Pre-eclampsia, bleeding during the antenatal period. But there was an abortion of first pregnancy due to rubella four years back. The suffering child was born from her second pregnancy, in which USG made the diagnosis of pregnancy only at the third month of the last date of a menstrual period. There was no detection of Pregnancy in UPT before that. So, there was a lack of nourishment in the first trimester.
- Birth history: - He was full-term LSCS (large for GA), cried immediately after birth with a birth weight of 4kg.
- Postnatal history: - No history of birth asphyxia, convulsion, any trauma etc.
- Mother history: - Mother also suffered from emotional disturbance and lack of nourishment during her antenatal period.
- Development history:-All milestones attained at the appropriate age, but unable to speak some words clearly and completely at the proper age.

Clinical findings

- General Examination
General Condition - Fair, Temp – Afebrile (98.7 f).
Vital signs – HR – 92/min, RR – 24/min
- Systemic Examination: - Examination of the cardiovascular system, respiratory system, per abdomen shown no deformity. In Central Nervous System Examination, Higher Mental Functions were examined in detail to rule out any CNS malfunctioning mentioned in table 2. Gait was Normal, no apparent Cranial nerve palsy was observed. Motor System Examination: - Muscle tone – Normal, Muscle Power – Grade 5, Reflexes – Normal on both sides. Examination showed that the child is normal but is hyperactive, irritable, and unable to speak small sentences.
- Ashtavidha Pariksha:
The findings of Ashtavidha Pariksha are provided in table no.3.
 - *Samprapti Ghataka*: -

- *Dosha – Pitta, Vata*
- *Dooshya – Rasa, Ashta Mano bhavas*
- *Agni – Mandagni*
- *Srotos – Rasavaha, Majajvaha, Manovaha Srotas*
- *Sroto Dushti – Sanga*
- *Adhithana – Shira*
- *Vyakta Sthana – Sarva Sharira*
- *Roga Marga – Abhyantara*
- *Roga Swabhava – Chirakari*
- *Vyadhi Vimischaya: - Pittaja Unmada* -Attention Deficit Hyperactivity Disorder [ADHD] Clinical features, e.g., excessive sweating, hot feeling of palm and feet, intolerance of heat, anger, lack of appetite observed in this patient exhibits the predominance of *Pitta Dosha* whereas Hyperactivity, unable to talk, lean, sleep disturbance shows *Vata* dominancy.

Treatment protocol

The details of the treatment plan of both external & internal adopted in this patient are shown in Tables 4 & 5.

Observation and therapeutic outcome (improvement in patient)

The diagnosis and observation of the patient were done with the help of DSM V [4], showing hyperactivity and impulsivity attention deficit. Significant relief was observed in all patients' complaints after one month of treatment, as shown in Table 6. Following improvements were seen in the patient after the course of treatment:

- Does not interrupt other activities.
- He is concentrating towards studies.
- Eye contact is improved
- Sit quietly in a place when he is asked for the same.
- Improvement in the speech was observed.

Discussion

According to Ayurveda, *Unmada* is an obsession occurring in cowardly and weak-minded individuals resulting from an imbalance of *Tridosha* (three-body humor) residing in the mind due to various etiological factors, e.g., intake of unhygienic, improperly processed, incompatible diet, and irregular dietetic habits. It is also mentioned that inappropriate physical activities by a very weak person and psychological disturbances caused due to over consciousness about illness, emotional instability like excessive anger, grief, irritability, fear, etc., result in the decline of balanced psychological functions in a person. *Satwa Guna* (quality of mind which is a symbol of positivity) tend to decrease in the person due to the above factors resulting in *Tridosha* (Three bodily humors) getting localized in *Hridaya* (Heart/Mental faculty), causing diminished functioning mental faculty and finally causing *Unmada* [10]. Due to loss of intellect, knowledge, and memory, the person does not experience happiness and sorrow. *Unmada* has five types; its

prognosis is Sadhya (Curable) by treating it with internal medications and various therapeutic procedures. After examination of the patient & considering the type of symptomatology and nature of pathophysiology of the diseases, medicines & procedures, e.g., *Ama Pachana*, *Agni Deepana*, *Shodhan Chikitsa* followed by *Medhya*, *Vata Anulomaka*, and *Brimhana* was adopted in this case.

Utsaadana with *Triphala Churna* and *Dashmoola Taila*: - *Utsaadana* is administered in an unctuous form as the powder is made into a paste added with lipids. It is mentioned that *Utsaadana* provides glow, beauty, and complexion. It is also a kind of Effleurage where stretching is not intended. Light or deep stroke may be used as per the requirement of the patients. Effleurage increases serotonin secretion responsible for combat depression, anxiety, irritability, etc. melatonin is secreted by the pineal gland of the brain and is responsible for sleep. Thus, it induces the Tranquilizer effect (*Nidrakara*). Moreover, Effleurage may reduce somatic dysfunctions. As a result, referred pain due to somatic dysfunction subsided spontaneously [11]. *Utsaadana* brings dilatation of channels and orifices of the body, removes blocks, rectifies metabolism, soothes nerves, de-stresses our body and mind, enhance blood circulation, enriches the cells with proper nutrients, and detoxifies the system.

Sarwanga Abhyanga with *Dhanwantara Taila* followed by *Dashmoola Kwatha Nadi Swedana*: - *Abhyanga* is a form of *Ayurvedic* therapy which involves massaging the whole body with lukewarm medicated oils. Oleating the body helps pacify *Vata* [12], which is responsible for hyperactive behavior in ADHD patients. Massage therapy has also been shown to increase serotonin levels which might help to modulate elevated dopamine levels in children with ADHD [13]. Amplified vagal tones, thereby amplified parasympathetic activity, have been eminent throughout a massage therapy, and this intensification is frequently linked with improved attentiveness and an extra relaxed state [14]. *Sarwanga Abhyanga*, followed by *Nadi Swedana*, is beneficial to this patient as it increases blood circulation to muscles, provides nutrition to muscles, helps in reducing motor neuron hyperexcitability, and reduces alpha motor neuron activity, and reduces the number of neurons subclinical depression. *Dhanwantara Taila*, used as a neuromuscular tonic, stimulates the nervous system and improves sensory-motor integration because of its *Vata* and *Pitta* balancing properties [15]. Thus, massage therapy helps break the pathophysiology of disease and improves the clinical symptoms of ADHD patients.

Nasya with *Brahmi Ghrita*: - Nose is the entrance of the head, so *Nasya* (nasal drug application) directly affects on brain [16]. The medicine administered for *Nasya* consists of lipid-soluble substances that have a greater affinity for passive absorption through the cell walls of the nasal mucosa. The primary action of *Nasya* is on the stimulation of receptor cells of the nasal mucosa. The olfactory nerve cells are in direct contact with both the environment and the CNS anatomically. The blood-brain barrier (BBB) has impeded the development of many potentially interesting CNS drug candidates due to their poor distribution into the CNS. The intranasal route can deliver therapeutic agents to the brain bypassing the BBB via intranasal delivery due to the unique connection of the nose and CNS. The peripheral olfactory nerves are chemoreceptors in nature. Olfactory nerves are connected with the brain's higher centers, i.e., the Limbic

system, consisting mainly of amygdaloidal complex, hypothalamus, epithalamus, anterior thalamic nuclei parts of basal ganglia, etc. so the drugs administered here stimulate the higher centers of the brain. Thus, the hypothalamus regulates the control of the autonomic nervous system, limbic system, hormone synthesis, emotional and behavioral patterns, body temperature and circadian rhythm, and the states of consciousness [17]. Thus, *Nasya* improves cerebral functions, enhances alertness, concentration abilities. *Brahmi Ghrita* is indicated in various psychosomatic and psychiatric disorders. It is astringent, bitter, having cooling properties. Due to its lipophilic nature, it affects BBB and is reported to improve intellect.

Basti Chikitsa: - *Basti* is considered as *Ardha Chikitsa* by *Acharya Charaka* [18]. *Basti* is a purification process by which all the three vitiated Dosha are expelled from the anal route, especially Vata, is alleviated. Along with *Vata*, it controls *Pitta*, *Kapha*, *Rakta*, *Samsargaja* and *Sannipataja Vyadhis* [19]. *Basti* acts on the whole body through the gut-brain axis; it works on the brain and helps reduce stress, anxiety, and depression. *Basti Dravyas* may activate the Neurohumoral transmission by stimulating the Gut-brain, regulating changes in behavior and emotions. And also, *Rajo Guna* is more predominant in ADHD [20]. This *Guna* usually controlled *Vata Dosha*. So, ultimately when *Vata* is controlled, auto-correction of *Rajo Guna* occurs. So, the *Basti Chikitsa* was adopted in this patient, in which *Matrabasti* with *Brahmi Ghrita* was given for seven consecutive days, followed by *Kashaya Basti* on the eighth day.

Role of Shamana Chikitsa

Agnitundi Vati and *Amapachaka Vati*: Both *Amapachak Vati* and *Agnitundi Vati* have excellent carminative digestive action. *Agnitundi Vati* is also a good nervine tonic. *Amapachaka Vati* given for that ADHD child helps in cleansing Aam, which had built up in the body and even the mind, and prevent adhesion of the channels. Building healthy Ojas (Vital energy) levels is the key to maintaining a healthy mind, nervous system, and body, i.e., balancing *Dosha* and *Dhatus*.

Manasmitra Vatakam: - *Manasmitra Vataka* is a compound formulation with drugs having reported effects on the central nervous system. Ingredients such as *Ashwagandha* (*Withania somnifera*) are known to enhance cognition; *Vacha* (*Acorus calamus*) helps to maintain mental and intellectual health; *Draksha* (*Vitis vinifera*) is adaptogenic and nootropic; *Bala* (*Sida cordifolia* Linn) is a known antioxidant; *Yashtimadhu* (*Glycyrrhiza glabra*) has anxiolytic and antioxidant effects; and so on. In the Ayurveda literature, these drugs are described as *Medhya* (neuroprotective, cognitive enhancer) and *Rasayana* (health and cognitive promoting) [21]. *Manasmitra Vatakam* reduced the anxiety, severity of the disease, increased quality of life, and improved clinical profile. *Manasmitra Vatakam* With Gold induces tranquilizer effects, reduces aggression and irritation.

Brahmi Ghrita: - *Brahmi Ghrita* is a polyherbal formulation used in the management of psychiatric disorders. *Brahmi* is one of the *Medhya* drugs (nootropic action) [22] and is recommended for various psychosomatic and psychiatric disorders. Bacoside, *Brahmi's* active principle, is responsible for improving memory-related functions, acts as a neuroprotective, and enhances the

transmission efficiency of nerve impulses by strengthening memory and cognition. The constituents responsible for cognitive effects are Bacoside A and B [23].

Sarsawata Churna: - *Saraswata Churna*, an Ayurvedic polyherbal formulation, consists of parts of different species viz *Kushta* (*Saussurea lappa*), *Ashwagandha* (*Withania somnifera*), *Saindhava Lavana* (Rock salt), *Ajamoda* (*Apium graveolens*), *Sweta Jeeraka* (*Cuminum cyminum*), *Krishna Jeeraka* (*Carum carvi*), *Shunthi* (*Zingiber officinale*), *Maricha* (*Piper nigrum*), *Pippali* (*Piper longum*), *Patha* (*Cissampelos pareira*), *Shankhapushpi* (*Convolvulus pluricaulis*), *Vacha* (*Acorus calamus*) and *Brahmi* (*Bacopa monnieri*) *Swarasa* (juice) for *Bhavana* (trituration). *Saraswata Churna* is mentioned in the *Bhaishajya Ratnavali* text in *Unmada Chikitsa*. The *Churna* helps to manage psychotic disorders like *Unmada*. Regular consumption of *Saraswata Churna* improves *Buddhi* (higher mental functions), *Medha* (intellect), *Dhriti* (control over mind), *Smriti* (memory power), and *Kavita Shakti* (poetic talent) [24]. Other related studies were reviewed[25-32].

Table 1
Chief & associated Complaints

S. N.	Nature of Chief Complaints	Grade	Duration
1	Hyperactivity	+++	Six years
2	Unable to speak properly	+++	Six years
3	Lack of concentration	+++	Four years
4	Excessive sweating	+++	Three years
5	Hot feeling over palms and feet	+++	Three years
6	Intolerance of heat	+++	Three years
7	Disturbances in Sleep	+++	Three years
8	Lack of appetite	+++	Three years
9	Recurrent mental irritation	+++	Two years
10	Aggression	+++	Two years
11	Recurrent Anger	+++	Two years

Table 2
Examinations of Higher Mental Function (HMF)

S.N.	HMF Tested	Examination & Remarks
1	Consciousness	Alert, conscious about surroundings
2	Attention and Concentration	Talks excessively, interrupts others activities, gets distracted during study time
3	Appearance	Good, well dressed, but Poor eye contact
4	Facial Expression	Normal
5	Behavior	Irritable after half an hour of the reading book), he leaves his place often
6	Identification	Body parts, numbers, color identification, are Good
7	Expression of Speech	Unable to speak two words at a time and unable to talk in small sentences also
8	Writing	Normal
9	Memory	Good

		Short term Memory - Present
		Remote memory – Present
10	Judgment	Good knows how to cope up with a situation

Table 3
Findings of Ashtavidha Pariksha

S.N.	Head	Observation
1	<i>Nadi</i> (Pulse)	<i>Vata- Pittaja</i>
2	<i>Mala</i> (Stool)	<i>Samyaka</i> (One time daily, satisfactory)
3	<i>Mutra</i> (Urine)	<i>Samyaka</i> (5-6 times a day/ 1-2 times at night, frequency and color were normal)
4	<i>Jivha</i> (Tongue)	<i>Saam</i> (coated)
5	<i>Shabda</i> (Speech)	<i>Aspashta</i> (Unable to speak properly)
6	<i>Sparsha</i> (Touch)	<i>Samshitoshna</i> (Normal)
7	<i>Drika</i> (Vision)	<i>Prakruta</i> (Normal)
8	<i>Akriti</i> (Posture)	<i>Madhyama</i> (Normal)

Table 4
Details of Panchakarma Procedure

S.N.	Panchakarma Procedure	Drugs	Duration
1	<i>Utsaadana</i>	<i>Triphala Churna, Dashmoola taila</i>	Two days
2	<i>Sarwanga Abhyanga</i>	<i>Dhanwantara taila</i>	7 days
3	<i>Nadi Swedana</i>	<i>Dashmoola Kwatha</i>	Seven days
4	<i>Nasya</i>	<i>Brahmi Ghrita</i> 4 Drops in each nostril	Seven days
5	<i>Matra Basti</i>	<i>Brahmi Ghrita</i> (50 ml)	Seven days
6	<i>Kashaya Basti</i>	<i>Brahmi Ghrita</i> – 150 ml, <i>Triphala Kashaya</i> – 100 ml, <i>Guda</i> – 10gm, <i>Madhu</i> – 10ml, <i>Saindhava Lavana</i> – 5gm, <i>Kalka (Madanphala, Bilva, Kushta, Yavani, Shatpushpa, Musta)</i> – 6gms. Total = 280 ml	On 8 th Day

Table 5
Details of internal medications

S.N.	Medications	Dose	Time of Administration	Anupana	Duration
A	Treatment during Admission				
1	<i>Agnitundi Vati</i>	One tab twice daily	Before food	Lukewarm water	Seven days
2	<i>Manasmitra Vatakam</i>	One tab twice daily	After food	Lukewarm water	Seven days
3	<i>Brahmi Ghrita</i>	Half teaspoon	Before food	Lukewarm	Seven

		twice daily		water	days
B	On Discharge Medicines				
1	<i>Amapachaka Vati</i>	One tab twice daily	Before food	Lukewarm water	One month
2	<i>Sarsawata Churna</i>	Three gms twice daily	After food	Madhu	One month
3	<i>Manasmitra Vatakam</i> with Gold	One tab twice daily	After food	Lukewarm water	One month
4	<i>Brahmi Ghrita</i>	Half teaspoon twice daily	Before food	Lukewarm water	One month

Table 6
Observations and improvement in symptoms

S. N.	Nature of Chief Complaints	Day 0	Day 15	Day 30
1	Hyper activity	+++	++	+
2	Unable to speak properly	+++	++	+
3	Lack of concentration	+++	++	+
4	Excessive sweating	+++	++	+
5	Hot feeling over palms and feet	+++	++	+
6	Intolerance of heat	+++	++	+
7	Disturbances in Sleep	+++	+	+
8	Recurrent Anger	+++	++	+
9	Recurrent mental irritation	+++	+	+
10	Lack of appetite	+++	+	+
11	Aggression	+++	++	+

Conclusion

In the view of Ayurveda, ADHD can be named *Unmada* due to the specific psychosomatic clinical presentation. The present case demonstrated the role of Ayurveda in managing *Pittaja Unmada* that was diagnosed with a hyperactive type of ADHD. The analysis of causative factors showed some relation with the prenatal psychological and physical status of the mother. The child treated showed good relief from the complaints with the help of internal medications: carminative, digestive, and mild laxative in action external oleation and medicated oil enema as suggested by *Acharya* in the treatment of *Unmada*. The child was normal during the follow-up period, and the child well tolerated the therapies. Hence the Ayurveda line of treatment can be adopted in ADHD.

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