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A VIEW OF AYURVEDA ON AUTISM SPECTRUM DISORDERS - A CONCEPTUAL STUDY

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ABSTRACT

Autism Spectrum Disorders (ASD) is a neuro-developmental disorder. It is defined by deficits in social reciprocity and communication and by unusual restricted, repetitive behavior[1] It is one of the challenging disorders for children and their families. Prevalence estimates for autism spectrum disorder (ASD) have been increasing over the past few decades, with estimates at about 5 in10,000 in the 1960s and current estimates as high as 1 in 88.[2] It is one of the challenging disorders for children and their families and this condition typically persists throughout one's life period. While coming to the view from Ayurveda, most clinical features of different varieties of autism spectrum disorder resemble the features of *Unmada*. The condition may be due to the result of *Khavaigunya* of *Srotas* which nurtures *Manas* as a consequence of many *Agantuja* and *Sahaja* factors.[3]

Keywords: Autism Spectrum Disorders, *Unmada, Manovaha srotas, Jnanotpatti*

INTRODUCTION

Autism Spectrum Disorders (ASD) is a neuro-developmental disorder, having a previous nomenclature of Pervasive Developmental Disorders in DSM-4. The researcher has shown a tenfold increase in Au-

tism cases over the past decade. It may be higher in immigrant populations. The male: female ratio is estimated to be 4:1. Epidemiological data estimate the global prevalence of ASD has been increasing over the past few decades. It is to be one person in 160, accounting for more than 7.6 million disability-adjusted life years and 0.3% of the global burden of disease.[4] It is the world`s third most common developmental disorder, so to spread awareness every year 2nd April is marked as Worlds Autism Day.

The features of Autism are much similar to that of *Unmadam.* Due to various etiological factors, the conjunction between *Atma* and *Manas* is disrupted resulting in the vitiation of *Manovaha srotas.* Along with this, the vitiation of three *doshas Vata, Pitta,* and *Kapha* will end up in the manifestation of *Unmada*. [5]*Manovaha sroto-dushti* together with *Tridosha dusti* is the basic cause of Childhood Autism.

The word 'Autism

The word "Autism" comes from the combination of the Greek words "auto" meaning "self" and "ism" meaning "the act, state, or theory of". The word 'Autism' initially was linked to detachment from reality in individuals with schizophrenia.

ETIOLOGY OF AUTISM

There is no well-known single cause for autism spectrum disorder, but studies suggest that genetic and environmental factors are the possible role for causing ASD.

1. Neurotransmitter abnormalities
2. Metabolic factors
3. Genetic factors
4. Environmental factors
5. Involvement of the immune system
6. Structural and functional changes in the brain

1. Neurotransmitter abnormalities

Some studies are characterizing the neurotransmitter, Serotonin involves in Autism and serotonin metabolism is affecting by genetic factors. For neurogenesis i.e., the formation of new neurons in the brain, serotonin plays a significant role.[6]

2. Metabolic abnormalities

In the pathology of Autism, there will be an Association of amino acids and organic acids, Krebs cycle analogues, melatonin, cyclic AMP, gangliosides, endorphins, lactate/pyruvate, glial fibrillary acidic protein and catecholamines have been studied.[7]

3. Genetic factors

With identical (monozygotic) twins, if one is autistic, the likelihood that the other twin may have some form of Autism is 90%. In great contrast, for fraternal (dizygotic) twins, the likelihood that the other twin will have a form of Autism is only 2 – 3 %.[8]

4. Immune factors

Maternal immune response, prenatal infection and altered immune responses in children with ASD are the prime focus of this study. The epidemiologic studies suggested that Progeny of women with a history of a viral or bacterial infection during the gestational period are said to be at increased risk of ASD.[9]

5. Environmental factors

Environmental factors cause an increased risk of Autism, and it is a burning topic of research. Few are quoted below.

- Lead and mercury poisoning
- Exposure to valproic acid or thalidomide very early in pregnancy
- Maternal alcohol consumption [10]

CLASSIFICATION OF ASD

According to the Diagnostic and Statistical Manual of Mental Disorders (DSM) IV (1994) and IV TR (2004), Autism and related disorders were collected under an umbrella of PDD - Pervasive Developmental Disorders (DSM-IV, 2000).[11]

Classic Autism

People with classic Autism develop language delay or have difficulties in talking with other people or lack of affection or emotional contact with others and concentrated wish for the sameness in routines, muteness or abnormality of speech, high level of Visio –spacial skills but major learning disabilities in another area.

Asperger's syndrome

Children diagnosed with Asperger's Disorder (AD) have difficulty in social interaction, reciprocity and communication. In comparison to autistic disorder, there is no significant general delay in language for diagnosed children with AD.

Childhood Disintegrative Disorders

Childhood disintegrative disorders include severe reversion in communication skills. In the beginning, these children seem perfectly normal. They start to regress between ages 2-4 years.

Rett Syndrome

Rett syndrome is a neurological and developmental disorder that mostly occurs in females and is manifest by poor head growth. Loss of muscle tone is usually the first sign.

Pervasive Developmental Disorders –Not Other Specified

Children with PDDNOS either do not fully meet the criteria of symptoms used to diagnose any of the four specific types above and or do not have the degree of impairment described in any of the above four specific types.

Table 1: Clinical features of ASD

Social Communication and Interaction Skills [12]	• Avoids or does not keep eye contact. • Does not respond to name by 9 months of age. • Does not show facial expressions like happy, sad, angry, and surprised by 9 months of age. • Does not play simple interactive games like pat-a-cake by 12 months of age. • Uses few or no gestures by 12 months of age (e.g., does not wave goodbye) • Does not share interests with others (e.g., shows you an object that he or she likes by 15 months of age) • Does not point or look at what you point to by 18 months of age. • Does not notice when others are hurt or sad by 24 months of age. • Does not pretend in play (e.g., does not pretend to "feed" a doll by 30 months of age) • Shows little interest in peers. • Has trouble understanding other people's feelings or talking about own feelings at 36 months of age or older. • Does not play games with turn-taking by 60 months of age
Restricted or Repetitive Behaviors or Interests	• Other objects and gets upset when order is changed. • Repeats words or phrases over and over (i.e., echolalia) • Plays with toys the same way every time. • Is focused on parts of objects (e.g., wheels) • Gets upset by minor changes. • Has obsessive interests. • Must follow certain routines. • Flaps hands, rocks body, or spins self in circles • Has unusual reactions to the way things sound, smell, taste, look or feel
Other Characteristics	• Delayed language skills • Delayed movement skills • Delayed cognitive or learning skills. • Hyperactive, impulsive, and/or inattentive behaviour • Epilepsy or seizure disorder • Unusual eating and sleeping habits. • Gastrointestinal issues (e.g., constipation) • Unusual mood or emotional reactions • Anxiety, stress, or excessive worry • Lack of fear or more fear than expected

ASD SCREENING, DIAGNOSIS, AND ASSESSMENT

Diagnosis of ASD is based on clinical history followed by observing and interacting with the child. There are no specific clinical markers or laboratory tests that can be used to diagnose autism. However, there are various standardized checklists, assessment tools, and criteria that are used to make a diagnosis of ASD. [13]

Screening checklists

- M-CHAT is an easy to administer checklist for screening of autism and the Indian Scale for Assessment of Autism is a scale developed for Indian children.

Diagnostic tools: Autism Diagnostic Observational Schedule is the gold standard diagnostic tool.

- Autism Diagnostic Interview-Revised
- Childhood Autism Rating Scale
- INCLEN Diagnostic Tool for Autism (INDT-ASD): An Indian tool to diagnose autism.

STANDARD APPROACHES

Occupational therapy: Occupational therapy employs a variety of strategies to help a child with Autism participate more effectively in everyday tasks. It helps strengthen certain areas like gross motor skills and fine motor skills.

- **Speech therapy:** Speech therapists work with the child and help improve communication. They use alternate methods like gestures, picture boards, etc. to help the child learn how to express their thoughts and ideas to others. It is important to have speech therapy as part of an interdisciplinary intervention programme because children with Autism have more trouble in communication.
- **Sensory integration therapy:** Helps the child deal with sensory information such as sights, sounds and smells. Sensory integration therapy could help a child who is bothered by certain sounds or does not like to be touched.

Other approaches

- **Music therapy:** For children with ASD, music therapy employs specific musical activities to improve social and communication skills in children with Autism.
- **Picture Exchange Communication System (PECS):** This is used commonly for children with Autism who have minimal or no communication abilities. Picture symbols or cards are used to facilitate communication.
- **Play therapy**

Play is regarded as a natural medium for self-expression.it provides an opportunity for the child to play out of his feelings as well as problems. In autistic children, the directive play therapy provides ample opportunities for the child to mature in the right direction.

UNDERSTANDING ASD IN *AYURVEDA*

For determines the process of cognition and by getting a generation of knowledge – *Jnana* there will be a Sequential association of *Indriya*, *Indriyārtha*, *Manas* and *Atma*. *Indriya* (sense organs) receive its corresponding *Artha* when stimulated by the *Manas* (sensory perception). This sensation is further screened by *Manas* (determination) ie the mental faculty and it is at this stage, *Smrti* is developed as a part of cognition, which is refined to *Budhi* or intellect and finally stored in *Atma*, the final abode of knowledge.[14] Imprint or *Smrti* is the product of a well-coordinated cognitive process. Any derangement in this sequence results in deranged behavioural and emotional responses and the person remains unfit to the social fabric. In short, the disruption in the cognitive process is the cause of all behavioural and communicative issues in ASD. The product of *Jnanotpatti kramam*– *Smrti* which further gets refined as *Jnana* is also affected in this case.

Jnanotpatti Karma

Social stimulus he receives from socialization for a normal being, he undergoes this *Jnanotpatti Kramam* and *Jnana* when a stimulus is generated. [15]This knowledge further helps him to respond in every further situation simulating this. In children with Autism, these social stimuli fail to pass. So, a well-coordinated *Jnanotpatti Kramam* by *Jnana* is not developed. Thus, when he gets exposed to the very same stimuli in another situation, he fails to have a socially fit response; he is marked odd in the social fabric and diagnosed autistically. This discord is the

causative factor behind social and behavioural deficits in Autism. This is what happens in the case of the patho- psychology of *unmada*. [16]

NIRUKTHI

- *Mano vibhramam*: Mental confusion - loss of social orientation and all behavioural issues in Autism
- *Budhi vibhramam*: Impaired intelligence - communication, learning and cognitive issues in Autism.
- *Samjna jnana vibhramam*: Impaired consciousness
- *Smrti vibhramam*: Impaired memory
- *Bhakti vibhramam*: Loss of desire, loss of innate quality of self-realization
- *Sila vibhramam*: Inappropriate manners and behaviours, repetitive behaviour and restricted behaviour
- *Chesta vibhramam*: Motor clumsiness and motor stereotypies
- *Achara vibhramam*: Loss of skills, inability to follow commands, lack of socialization.

Understanding the pathophysiology of Autism

Srotas are the channels that are responsible for *Dosha GamanaDhatu Pusti* and *Mana Sudhi* in these channels cause derangements and are responsible for various physiological anneurological disabilities. A possible cause of Autism may be *Khavaigunya* as consequence of many *Agantuja* and *Sahaja* factors and further vitiated *Doshas* may exacerbate the *Khavaigunya* leading to various core features of Autism. The nearest similarity of Autism with Ayurvedic diagnosis is *Unmada* (Insanity). The *Lakshanas* (features) described in *Unmada* with are a mixture of features of *Vata, Pitta* & *Kapha* singularly or collectively are even seen in Autism.[17]

Table 2: Features of Unmada correlated with ASD/PDD

Features of *vatajonmada*		**Features of ASD / PDD**	**Type of ASD / PDD**
Parisaraṇam Ajasra	Always running around	Hyperactive	Childhood Autism
Akasmat akshi bhru oshṭa amsa hanu agrahasta pada anga vikshepana	Repeated movements of eyebrows, lips, chin hands feet and other organs	Highly repetitive and stereotyped hand and eye movements	Childhood Autism
Satatam aniyatanam ca giram utsargah	Frequent utterance of uncontrolled sound and voice	Monotonous speech, oddity in speech	Asperger syndrome
Phenaagamam Asya	Drooping of saliva	Drooping of saliva	Rett syndrome
Abhikshna Smita hasita nrutya gita vaditra samprayogasca asthane	Excessive screaming, dancing, singing. using musical instruments at improper places	Fond of music etc Screaming without any cause	Autism Asperger syndrome
Vina vansa sankhasamyatala sabdanukaraṇam	Mimicking *vīṇa*, flute Etc	Echolalia	Autism Asperger syndrome
Yanam ayānaih	Riding on nonvehicle toys etc.	Riding on nonvehicle toys etc.	Autism
Alankaraṇam analnkarikair dravy air	Ornamentation with non-ornamentals	Ornamentation with non-ornamentals	Autism
Abhyavahareşu avalabdheshu lobhacha	The desire for rare edible food materials	Eating disorder Selective eating	Autism Asperger syndrome

Features of *paittikonmādam*		**Features of ASD / PDD**	**Type of ASD / PDD**
Amarsha	Intolerance, Impatient	Reluctance or impatience for turn talking	Autism Asperger syndrome
Krodha	Anger	Temper tantrums	Autism Asperger syndrome
Asthane Samrambha	Violence or aggression at improper situations	Violence or aggression at improper situations	Asperger syndrome
shastra loshtra kasha kashtha mushṭibhir abhihananam paresamm va	Makes self-injuries. by hiking arrows wood or fist	Self-injury	Autism Asperger syndrome
Abhidravaṇam	Attacking	Attacking	Severe Autism Asperger syndrome
Prachayasitodaka Annabhilasha	The desire for cold food and water	The desire for cold food and water	Autism Asperger syndrome
Santapam ca Atirekam	Excessive heat or Anguish	Excessive distressed	Autism Asperger syndrome

Table 3: Clinical features of Autism & their relationship with *Dosha* [18]

Features of *kapha-jonmada*		**Features of ASD / PDD**	**Type of ASD / PDD**
Ekadeśe sthanam	Stay in one place or Spot	Solitary play	Childhood Autism
Tūşṇīmbhāvah	Silence, less talkative	Less babbling and speech along with gestures	Childhood Autism
Alpaśah Camkramaṇam	Clumsiness, less Mobility	Clumsiness, less Mobility	Asperger syndrome
Lalā śinghāṇaka Sravaṇam	Drooling of saliva, running nose	Drooling of saliva, running nose	Organic pathologies with autistic features
Anannābhilāşa	Aversion towards Food	Eating disorder	Childhood Autism
Rahah kāmatā	Liming for loneliness	Show less attention	Childhood Autism

	Clinical features	*Dosha*
communication features Social features	The problem in verbal and non-verbal communication	*vata*
	Inability to engage socially or emotionally with caregivers	*vata*
	Preference for solitary play	*vata*
	Poor eye contact	*vata*
Language Features	Delay of speech and language	*vata*
	Impairment in comprehension and language	*vata*
	Fluent but unintelligible jargon	*vata*
	Irritable	*vata*
	Chronically unhappy	*vata*

	In some cases, hyperactivity and impulsivity	*vata*
	Stereotypical body movements	*vata*
	Behaving like deaf	
Mental features	Neurological dysfunction like seizures	*vata*
	Few children showing amazing remarkable talent	*Vata kapha*
	Mental retardation in 50-70% cases	*vata*
	Sleep disturbance	*vata*

CHIKITSA

In *Ayurveda,* Dhee *Dhairya Atmadi Vijnam Manoaoushodhamparam*. So, for that the main treatment is proper counselling and use specific *Medhya rasayanas* advocated.[19]

Yuktivyapashraya chikitsa

Different types of internal medication especially agni deepaaka dravyas, *Ghrita* preparations, *medhya* drugs and external procedures like *Nasya, Dhupanas, Dhoompanas, Shiropichu tailam* and *shiro abhyanga* to reduce symptoms should be adopted.

Daivayapashraya chikitsa

Ayurveda uses various psychological measures for getting the desired effect of a therapy or condition not responding to treatment. This comprises of chanting of hymn, offerings etc.

All this practice acts at the psychological level.

Satvavajaya chikitsa

This includes behaviour therapy which helps to control senses from harmful objects and controlling temper tantrum. Apart from that *Medhya* and *Vatahara* drugs should aim to correction of maladaptive behaviour.

Specific treatment

In *Ayurveda*, various remedies have been described by *Acharyas* to correct cognitive, adaptive behaviour functions and memory.

DISCUSSION

Even though the condition has not been mentioned directly in Ayurveda, similar features suggesting Autism has been described. The exact cause of Autism is still not known, genetic factors *(Beeja Dosha)* and antenatal and postnatal factors may affect this disease. *Prajnaparadha* by the pregnant mother is another cause because it may lead to *Manovikara* in the neonate which results in the appearance of the signs of autistic spectrum disorders at a later period. *Vata Dosha* is a prime factor responsible for the neurological as well physiological functions of the body, all the above-observed causes lead to *Dushti* of *Vata* which is the most important reason in developing the features of Autism.

CONCLUSION

Ayurveda opens a large door in the management of Autism and similar condition and shows the ray of hope to those in dark. *Symptoms of unmada* seem to be the most appropriate correlation after understanding this disorder from the Ayurveda aspect. Considering *Vata Dushti* as a prime reason for causing the disease, treatment must be planned according to the child's ability to tolerate the same and towards normalizing the *Vata Dosha*. However, Ayurveda advocates prevention of these types of conditions as a more beneficial measure than managing them.

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