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AN AYURVEDIC AND MODERN APPROACH OF AUTISM SPECTRUM DISORDERS AND ITS MANAGEMENT

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ABSTRACT

Autism is a neuro-developmental disorder which is defined by deficits in social reciprocity and communication, and by unusual restricted, repetitive behaviors. It begins in early childhood and characterized by qualitative impairment in communication skills, social interactions and reciprocity, imagination and play. Latest global survey suggest that 1 per 68 children are being diagnosed with ASD. Autism Spectrum Disorders can be explained under the disease *Unamada*. In modern science different therapies available such as Cognitive behaviour therapy, Play therapy, Speech therapy, Holding therapy, Music therapy, Reiki treatment etc have been tried for longer periods to obtain substantial improvement in these children, but not satisfactory. Autism Spectrum Disorders can be explained under the disease *Unamada*. The majority of clinical features of different varieties of Autism Spectrum Disorders resemble features of *Vatika* and *Kaphaja* dominant *Unamada*. The interventions rationally employed based on the treatment principles of *Unmada* like purification therapies, various procedure based therapies and medications remove or reduce the effect of the triggering elements which precipitate the condition. Moreover, the Autism Spectrum Disorders require a long term intervention and the improvements seen after each course of management may amplify steadily.

KEYWORDS: Vatika, Kaphaja Unmada, ASD.

INTRODUCTION

Autism is a neurodevelopment syndrome that is defined by deficits in social reciprocity, communication, and by unusual restricted, repetitive behaviours. It is diagnosed on the basis of early-emerging social and communication impairments and rigid and repetitive patterns of behaviour and interests. The manifestation of these varies greatly with age and ability and the notion of an autism spectrum has been introduced to recognize this diversity. Autism is the way of life for some. Several scientific views about the condition are mostly directed towards the dead end of the medical science. Autism can be managed effectively through the rational utility of certain Ayurvedic drugs and treatment procedures. This article deals with the present knowledge Autism Spectrum disorders as a whole and modern as well as Ayurvedic management in special.

History of Autism: The term autism first was used by psychiatrist Eugen Bleuler in 1908. He used it to describe a schizophrenic patient who had withdrawn into his own world. The Greek word "autós" meant self and the word "autism" was used by Bleuler to mean morbid self-admiration and withdrawal within self. The term

describes conditions in which a person is removed from social interaction, hence, an isolated self.

Prevalence of ASD: There has been an increase in the reported prevalence and incidence of Autism Spectrum Disorders for the last two decades. Latest global survey suggest that 1 per 68 children are being diagnosed with ASD Autism is reported to be five times more common in boys than girls. The male: female ratio is estimated to be 4:1. It may be higher in immigrant populations¹.

Causes of ASD: The causes of ASD are still controversial. Genetic susceptibility as well as environmental trigger factors are considered as the most possible ones.

Genetic factors: There is no specific gene that causes Autism. But numerous studies have identified chromosomal hotspots in Autism including loci on chromosomes 6, 7, 13, 15, 16, 17 and 22. Autism may be an end product of gene environment interaction and that may be the reason for difficulty in identifying exact genetic backup in Autism Spectrum Disorders. The autistic features associated with Tuberous Sclerosis,

fragile X syndrome etc also suggest the role of genes in the causation of Autism Spectrum Disorders.

Familial factors: There is higher risk for ASD among siblings. Closer spacing of pregnancies, advanced maternal age, extremely premature birth as well as familial members with learning problems, psychiatric disorders and social disability have been identify as risk factors.

Environmental factors: Environment plays an important role in the development of Autism Spectrum Disorders. This can be either an abnormal intrauterine environment such as toxic foods, use of alcohol, infections, drugs, exposure to radiation etc or an environmental exposure after birth like foods, medicines, radiation, environmental pollution, attitude of people in home, school, work place etc.

Some other causes of ASD include psychological factors, neurological factors, food allergies etc.

Classification of ASD

The classification of Autism Spectrum Disorders has undergone many revisions with progression of knowledge and time. At present, the diagnosis of Autism spectrum brings all similar disorders with Autistic features under one umbrella. The Autism Spectrum Disorders include the following conditions.

- Autistic disorder
- Asperger Syndrome
- Rett Syndrome
- Pervasive Developmental Disorder- Not Otherwise Specified (PDD-NOS)
- Childhood Disintegrative Disorder (CDD)

Earlier Autism was included under the broader category of Pervasive Developmental Disorders. The term Pervasive Developmental Disorders refers to a group of disorders characterized by abnormalities in communication and social interaction and by restricted repetitive activities and interests.

Clinical Features of Autism Spectrum Disorders Social interactions and relationships:

- Lack of eye contact and facial expressions
- Lack of joyful expressions
- Lack of gestures
- Lack of sharing of enjoyment
- Lack of response to name
- Lack of interest in other children, prefers to play alone
- Lack of sharing enjoyment or achievements with other people
- Failure to form close relationships with peers or children of same age
- Abnormal body posture

- Unaware of other's feelings or distress such as pain or grief
- Difficulty seeing other's point of view
- Treating others as objects or tools.

Verbal and nonverbal communication:

- Delay in speech or lack of learning to talk
- Problems in taking steps to start a conversation
- Stereotyped and repetitive use of language
- Echolalia
- Difficulty understanding listener's perspective like meaning. Humour etc.

Limited interests in activities and restricted and repetitive behaviours:

- An unusual focus on parts of an item such as toy
- Preoccupation with certain items or topics
- Lining up toy or focused with only 1part of a toy (e.g., spinning wheels)
- Limited or lack of pretend play
- A need for sameness and routines such as eating same food or preferring same route for travel
- Stereotyped behaviours Repetitive hand flapping, rocking, or spinning movements
- Intense interests in certain topics such as chemicals, vehicles etc.
- Distress with small changes to the routine
- Hypo- or hypersensitivity to sensory stimuli such as distress with loud noises or light smell)
- Hyperactivity
- Impulsivity
- Attention deficit short attention span.

Associated problems

- Mental retardation
- Physical clumsiness
- Seizures
- Gastrointestinal problems such as constipation, abdominal pain, bloating, diarrhea, or nausea
- Mood disorders
- Anxiety problems
- Phobias or excessive fears
- Transition-related stress
- Excessive startle
- Obsessions and compulsions

ASD - Screening, Diagnosis and Assessment

A large number of Questionnaire and Checklists are available. They serve for different purposes including diagnostic screening, symptom severity and treatment evaluation.

Amongst these tools, the Autism Diagnostic Interview-Revised (ADI-R) and the Autism Diagnostic Observation Schedule (ADOS) are considered the gold standards for

assessing Autistic children. Various other questionnaires (e.g., The Childhood Autism Rating Scale, Autism Treatment Evaluation Checklist) and tests of cognitive functioning (e.g., WISC (Wechsler, 2003, 4th Edition) are typically included in an ASD assessment battery.

Autism - Diagnostic tests

No tests are confirmatory for diagnosing Autism Spectrum Disorders. Tests show much variability in different subtypes of ASD. Clinically suspected cases of ASD can be confirmed by Neuro imaging techniques, EEG analysis, neuro chemical biomarkers, epigenetic studies and tests for heavy metal poisoning.

ASD - Treatment Outline

Since medical management was fruitless in these conditions every other therapy has been tried to obtain a satisfactory relief for the affected population. Different therapy available such as Cognitive behavior therapy, Play therapy, Speech therapy, Holding therapy, Music therapy, Reiki treatment etc have been tried for longer periods to obtain substantial improvement in these children. Many children have to be followed up to whole part of their life to live a meaningful life.

Play therapy

Play is regarded as a natural medium for self expression. Play therapy provides an opportunity for the child to play out 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.

Early Intensive Behavioural Intervention

Early Intensive Behavioural Intervention (EIBI) is one of the most widely used treatments for children with Autism Spectrum Disorders. It is based on the principles of Applied Behaviour Analysis (ABA). EIBI is a parent oriented training program that is usually guided by professional behaviour therapists. In this program skills of the affected child are encouraged through positive reinforcement. It is usually customized as per the level of skills and needs of the child. A weekly schedule of 30-40 hours intensive behavioral intervention is provided in the preschool age.

Behaviour Modification: Behaviour analytic treatment of children with autism includes the use of empirically demonstrated behaviour change techniques to increase or decrease the frequency of behaviours. Behaviour analytic treatment is presently known by the name ABA and used worldwide in teaching desired skills and reducing challenging behaviours that interfere with learning in ASD. Now it is generally accepted that Discrete Trial Training (DTT), the core aspect of Applied Behaviour Analysis is capable of increasing learning process and of altering behaviour of autistic children.

ABA - Lovaas model: It is an Early Intensive Behavioural Intervention (EIBI) developed by psychology professor Ole IvarLovaas at the University of California, Loa Angeles (UCLA). The major aspect of Lowas model ABA is the discrete trial teaching, in which the skills are broken down into their most basic components, and teaching the individual components over a period of time by rewarding positive performance with rein forcers. The taught behaviors will be generalized thereafter in a naturalistic setting. Now DTT is considered as the preferred technique in teaching autistic children skills requiring repetition and not intrinsically motivating.

There are 5 main techniques involved in DTT

- 1. Breaking skills into smaller component parts.
- 2. Teaching one component of a skill at a time.
- Providing repeated sessions in a particular period of time
- 4. Using prompts as required
- Fading prompts gradually using reinforcement for correction of behaviors.

Speech Therapy: Speech and language pathologists identify the problems of communication in autistic children and work with developing non verbal communication, speech pragmatics, conversation skills and concept skills. A picture exchange communication (PECS) is sometimes used in children who find picture symbols helpful to communicate more effectively.

Other therapies that are partially useful in ASD management included

- Holding therapy
- Music Therapy
- Raiki Healing

Autism Spectrum Disorder as per *Ayurveda*: Autism Spectrum Disorders can be explained under the disease *Unmada*. The majority of clinical features of different varieties of Autism Spectrum Disorders resemble features of *Vatika* and *kaphaja* dominant *Unmada*.

Autism shows abnormal involvement of almost all of the mental faculties described in *Unmada* such as²,

- *Manas* mind- Which is invariably affected in Autism Spectrum as it encompasses all the faculties
- Buddhi intellect Could be genius and abnormal as seen in savant abilities or subnormal as seen in Mental retardation.
- *SamjnaJnan* Conscious presence may be involved as the child is seen to be lost in his own world, barring one or more sensory stimuli.
- **Bhakti- longing-** Innate willing to communicate with others may be lost.

- **Shila- manners -** Inappropriate emotional outbursts and adhering to specific rigid routines, due to inability to change.
- Cheshta- activities- Motor stereotypy's which are inappropriate and compulsive.
- Achara- learnt skills- Impaired socialization skills, inability to follow commands, regression of language and social milestones, etc.

Causes of Autism Spectrum Disorders (Unmada)³

The causes of Autism (*Unmada*) can be summarized into the following headings:

- Beejadosha (Genetic alteration, mutation)
- Aharadosha (Food related causes) such as Viruddhahara (incompatible foods).
- Viharadosha (Inappropriate regimens)
- Manaabhighata (Brain injury)
- Vaikarikabhava such as Bhaya, kopa, soka and harsha (Emotional factors such as fear, anger, sorrow, pleasure etc)

Prakruti and **Beejadosha:** In Autism Spectrum Disorders the child is born with an Autistic Prakruti (trait) or Vikruti (disease) and an unfavorable

environment results in development of abnormal social and verbal communication and undesired, challenging behaviour and interests. Environmental factors (Paristhitidosha).

According to Ayurveda the role of environment is of three fold in which the antenatal conditions take a prime role. The dietetics and mode of life contraindicated for pregnant women or the factors likely to harm the fetus is explained as garbhopaghatkarbhavas and are assumed to have major role in its etiology.

Perinatal events like hypoxic state, ischemic insult, hyperglycemia, etc may result in the development of Autistic features in some. Postnatal meningitis, seizures, jaundice and consequent brain damage have been noted as contributors of Autistic features in children. Food Antagonism-Incompatible Foods (Virudhaahara)

Similarities of Autism Spectrum Disorders and Unmada

The majority of clinical features of different varieties of Autism Spectrum Disorders resemble features of *kaphaja Unamada*.the features are of *kaphaja Unmada* compare with autism spectrum disorders are as follows in table.

Table No. 1: Similarities in the features of ASD and Vatika Unmada⁴

Features of Vatika Unmada	Features of ASD	Type of ASD
Always running about	Hyperactive	Childhood Autism, Autistic disorder
	Highly repetitive & Stereotyped hand and eye movements	Childhood Autism, Autistic disorder
Frequent utterance of uncontrolled sound and voice	Monotonous speech, Oddity in speech	Asperger syndrome(AS)
Frothing of saliva	Drooling of saliva, sucking of fingers	Rett's syndrome, Organic Brain problems (Tuberous sclerosis etc.) with Autistic features
isinging lising of milsical instruments	Fond of music, dance etc., screaming without any reason	Childhood Autism, Autistic disorder, Asperger syndrome(AS)
Mimicking of veena, flute, conch shell etc.	Echolalia	Childhood Autism, Autistic disorder, Asperger syndrome(AS)
Riding on non-vehicle toys or objects	(Riding on non-vehicle toys or objects)	Childhood Autism, Autistic disorder
Ornamentation with non- ornamental substances	Ornamentation with non- ornamental substances	Childhood Autism, Autistic disorder
Desire for rare edible food materials	Eating disorder (selective eating)	Childhood Autism, Autistic disorder, Asperger syndrome(AS)
Aversion or competition for freely available food	Eating disorder (over eating)	C:hildhood Autism, Autistic disorder, Asperger syndrome(AS)

Table No.2: Similarities in the features of ASD and Kaphaja Unmada⁵

Features of Kaphaja Unmada	Features of ASD	Type of ASD
Stay in one place or spot	Solitary play	Childhood Autism, Autistic disorder
Silence, less talkative	Have less babbling &speech along with gestures, (pedantic/formal or idiosyncratic speech, and oddities in loudness &pitch)	Childhood Autism, Autistic disorder
Clumsiness, less mobility	Clumsiness, less mobility	Asperger syndrome

Drooling of saliva, running nose	Drooling of saliva, running nose	Organic Brain problems (Tuberous Sclerosis etc.) with Autistic features
Aversion towards food	Eating disorder	Childhood Autism. Autistic disorder
Liking for loneliness	Show less attention to social stimuli, Smile and look at others less often Solitary play	Childhood Autism Autistic disorder
Disgusting/cruel/ envious	Disgusting/cruel/ envious	Asperger syndrome
Dislike for bathing and toileting	(Dislike for bathing and toileting)	Childhood Autism, Autistic disorder
Sleepy	Less active	Low functioning Autism
Puffiness of face	puffiness of face	Organic Brain problems (Tuberous sclerosis etc.) with Autistic features

Management of Autism Spectrum Disorders-Ayurvedic perspective

There are three classical therapeutic streams advocated by *Ayurveda* which used in the management of Autism Spectrum Disorders (*Unamada*). They are^[6]

- 1. Daiva Vyapasraya (Confidence building treatment) rites and rituals to ward off the unseen evil forces (environmental agents including micro organisms) and in turn protecting the body and mind.
- Yukti Vyapasraya (Rational Medical Management) rational prescription of drugs, therapies, food and activities to keep the equilibrium of the body intact.
- 3. Satvavajaya (Mind or self control techniques) cognitive, behavioural and spiritual knowledge and training methods to develop and maintain the mental faculties.

The rational *Ayurveda* treatment is carried out in four parts. They are

- (1) Dosha pacifying therapy (Samsamana),
- (2)Bio-cleansing therapy (Samsodhana or Panchakarma)
- (3) Avoidance of causative factors (*Nidana Parivarjana*)
- (4) Favourable diet and regimens (Pathya Ahara vihara).

Classical Management of Autism Spectrum Disorders in line with treatment of $Unmada^{[7]}$

Autism requires therapies which work at the physical, mental and spiritual planes. Classical *Ayurvedic* treatment recommended for *Unmada* (Psychological disorders in general) is well suited to bring back children affected with Autism Spectrum Disorders to normalcy. The classical *Ayurvedic* management of *Unmada* is as follow

- *Deepana* and *Pachana* (Drugs and procedures that promote digestion)
- *Snehapana* (internal oleation use of medicated ghee)
- Mridu shodhana (mild body purification by emesis or purgation)

- *Niruhabasti* (decoction enema) and *Snehavasti* (oil enema)
- Sirovirechana or Nasya (medicated nasal drops)
- Sanjnaprabodhana¹³ (oral medication to stabilize the mind)

Procedure based therapies: Apart from the modified *Panchakarma* therapies, certain procedure based therapies are also used in the management of Autism Spectrum Disorders. These are mainly used to promote the development of brain and to reduce or control the troublesome behaviours found with Autism Spectrum Disorders.

- Abhyangam (Oil massage-head and body)
- Siropichu (Overhead application of specific oil)
- *Sirodhara* (Pouring of specific oil over forehead as a continuous stream)
- Sirolepam (Overhead application of medicinal paste)
- *Takradhara* (Pouring of medicated buttermilk over forehead as a continuous stream)

Follow up treatment found effective in the management of ASD

After the main course of treatment, a child affected with Autism Spectrum Disorders requires steady and continuous follow up therapy up to the commencement of next intensive therapy. The following medications and miniature therapies are useful for follow up.

Decoctions (Kashayam)

- DrakshaSamangadikashayam
- DrakshaMadhukadiKashayam
- Chandanadikashayam
- Kallyanakamkashayam

Ghrita preparations

Ghrita preparations are very important in the management of Autism Spectrum Disorders. Medicated Ghrita, after absorption, readily enters the brain crossing the blood brain barrier. The selection of a particular Ghrita is decided on the basis of two things. Primarily you have to decide whether the selected Ghrita is indicated for Unmada (Psychological Disorders). Secondly the selected ghee should alleviate the dominant

humor of the particular clinical subtype of Autism Spectrum Disorders. The *Ghrita* preparations most commonly used in the management of Autism are the following.

- Kallyanaka ghrita^[8]
- Mahakallyanaka ghrita^[9]
- Mahachetasa ghrita
- Jivanthyadi ghrita
- Siddharthak Ghrita^[10]
- Mahapaishachika Ghrita^[11]
- Lashunadda Ghrita^[12]
- Fala Ghrita^[14]

Psychotherapies (Satwavachaya Chikitsa^[15])

The *Satwavajaya* aspects of Autism management include psychotherapy, behaviour therapy etc which improve the social skills of the child. Different methods used in the achievement of *Satwavachaya* in Autistic children include the following

- Bandhana and Tamogriha Rodhana (Detention in dark rooms- those who are attacking in nature)
- *Tarjanam* (scolding)
- *Trasanam* (frightening)
- Danam (rewards, reinforcement.)
- *Harshanam* (delighting)
- Santwanam (pacification)
- *Vismayam* (magic)

These methods are useful in bringing back the different mental faculties deranged in Autistic children to normalcy. Some of the psychotherapies mentioned in *Ayurveda* include uses of aversive that are not recommended in the present era.

The above mentioned 'Satwavajaya' aspects of Autism management include fundamentals of Cognitive Behavioural Therapy (CBT) or Applied Behaviour Analysis (ABA) therapy that would improve the social skills of the Autistic and perverted children. Moreover, it is intended to modify the perspective of the child about the society.

Single drug recommended in ASD (*Unmada*)

Various single drugs used in ASD (unamda) are as follow

- 1. Lashuna (Allium Sativa)
- 2. *Hingu* (Ferula Narthex)
- 3. Chorak (Angelica Glauca)
- 4. Bramhi (Becopa Monnieri)
- 5. Jatamamsi (Nardostachys Jatamansi)
- 6. Sankhpushpi (Convolvulus Pluricaulis)
- 7. Kooshmanda (Benincasa Hispida)
- 8. *Yastimadhu* (Glycyrrhiza Glabra)
- 9. Vacha (Acorus Calamus)

Pathya^[16] for ASD (Unamada)

The foods indicated for ASD (*Unmada*) are cow's milk, *Goghrita*, good sleep *Puran Shali Shashtik*, *Draksha*, yava, yavagu laja saktu, kulmasha, etc.

Apathya for ASD (Unamada)

The foods contraindicated for ASD (*Unmada*) are alcohol, purgent and spicy food, penetrative and irritant food, irritating insulting incidences and activities, suppression of natural urges, incompletible and polluted food, sleeplessness.

Management of various clinical problems of Autism Spectrum Disorders Drugs and therapies for speech and language improvement

Communication including Speech and language development is critically affected in all the cases of Autism Spectrum Disorders though the intensity and type of problem may vary considerably from patient to patient. Brahmighrita, Saraswataghrita, Vatasanitailam, Balatailam, Saraswatarishtam, Aswagandharishtam, Saraswatachoornam, Kallyanavalehachoornam, Aswagandhadileham, Kooshmandarasayana, Balasairyakadikashayam, Saraswatamgulika are valuable drugs used to enhance speech and language.

Procedure based Therapies such as *Taila Siro Pichu* (Application of oil over head) and *Sirolepam* (application of medicinal paste overhead) are the two common applications which are supposed to provide improvement in speech and language. *Amalaki*, *Brahmi* and *Mandookaparni* are the main drugs used in *Sirolepam*.

Medication and therapies for reducing disruptive and challenging behaviours: Undesired, disruptive and challenging behaviours are the major problems of moderate and severe types of Autism Spectrum Disorders. Intensive structured behaviour modification therapies for a minimum of 40 hours per week for long periods are the treatment of choice now to control them. Usually, certain Ayurvedic drugs and therapies used internally and externally ease out the difficulties in carrying out the behaviour modification therapies in such children. Chandanaditailam, Vatasanitailam, Himasagaratailam, Tiktakaghrita, Kallyanakaghrita, Manasamithravadakam are useful drugs in this category. Procedure based therapies such as Siropichu (Head application of oil), Sirolepam (Head application of Medicated paste), Takrasirodhara (Pouring medicated butter milk over forehead) are also found beneficial.

Sensory Integration Therapy: The sensory disintegration may be due to both genetic and developmental causes. Internal medication such as medicated ghee and oil preparations shall modify the sensory impairment or excitation seen in Autistic children. Kallyanakaghrita, Jivanthyadighrita, Vatasanitailam, Ksheerabalatailam, Dhanwantharamtailam, Mahanarayanatailametc are some of the medication used for obtaining sensory

integration. Procedure based therapies such as powder and oil massage, *Snehadhara* (Pouring continuous stream of oil over body), *Shashtikapindaswedam* (Massage with hot medicated paste) etc are found to be providing good results in reducing sensory integration problems.

Management of Motor clumsiness in Autistic children: A few children with Autism Spectrum Disorders may appear awkward or clumsy in their motor skills and gait. These are mainly due to motor in coordination and partly due to behavioural problems. Vata alleviating drugs coupled with body massage and sudation can improve the motor clumsiness and awkward movement. Powder massage, oil massage, Patra potliswedam (Sudation with warm medicated sacks), Shashtika Lepam (Massage with warm medicated paste), Kaya sekam (Pouring of oil as a stream over body followed by massage) are useful treatment procedures.

Prevention: An *Ayurveda* dominant pre conception care and life style of marrying partners, a pre, post and neonatal care of pregnant woman, foetus and newborn as well as prescribed daily routines, seasonal care and ethical regimens shall pave way for preventing and eliminating Autism Spectrum Disorders and the like from the society.

CONCLUSION

To conclude, Autism is perceived as a manifestation having its root deep in the Bijadosha (genetic predisposition) and activated by risk factors. Hence it is considered as genetic form of Unmada (Psychiatric disorders in general), which is a lifelong condition. The Ayurvedic interventions are not going to alter the initial genetic makeup altogether. The interventions rationally employed based on the treatment principles of Unmada like purification therapies, various procedure based therapies and medications remove or reduce the effect of the triggering elements which precipitate the condition. Moreover, the Autism Spectrum Disorders require a long term intervention and the improvements seen after each course of management may amplify steadily. Ayurveda opens a huge door in the management of Autism and similar conditions and shows the ray of hope to those in dark

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