



Case Study

MANAGEMENT OF AUTISM SPECTRUM DISORDER THROUGH AYURVEDIC INTERVENTION AND DIET MODIFICATIONS

Arun B¹, Nivya K R^{2*}

¹Assistant Professor, Department of Kaumarabruthyam, ^{2*}House Surgeon, Vaidyaratnam Ayurveda College, Ollur, Thrissur, Kerala, India.

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ABSTRACT

Autism spectrum disorder includes a group of neurodevelopmental disorders, which disrupts normal functioning of the brain and impairs communication, social interaction, emotional balance with the presence of repetitive stereotypic mannerisms. Underlying etiology of autism spectrum disorder is still unknown. Studies on genetic causes, immune system dysregulation, inflammation, exposure to environmental toxicants, defective gut microbiome are still continuing. In ayurveda, most psycho social abnormalities are included in the category of *Unmada*. Along with other etiological factors, impaired digestive and metabolic functions are postulated as the root cause of *Unmada*. And in accord with the gut brain axis, systemic accumulation of metabolic wastes also disrupts the functional integrity of the brain. The present study describes the case of a child with ASD with hyperactivity, who has been clinically diagnosed and treated with Ayurvedic medications, *Sneha sweda* therapies and diet modifications, which helps in maintaining the healthy functioning of the brain. Within 3 months of intervention, the child became symptomatically better. Case study briefs Ayurvedic concepts and Ayurvedic treatment protocols regarding ASD.

INTRODUCTION

Autism spectrum disorder (ASD) is a neuro-developmental disorder characterized by deficits in social communication and the presence of restricted interests and repetitive behaviors^[1]. In 2013, the Diagnostic and Statistical Manual of Mental Disorders-5th edition (DSM-5) was published, updating the diagnostic criteria for ASD.^[2] Autism spectrum disorder (ASD) is the new name of four previously separate disorders. Autism spectrum disorder now encompasses the previous DSM – IV autistic disorder (autism), Asperger's disorder, childhood disintegrative disorders and pervasive developmental disorders not otherwise specified^[3]. On a broad spectrum ASD encompasses diseases previously referred to as early infantile autism, Childhood autism, Kanner autism,

high functioning autism, atypical autism, Asperger's syndrome, childhood disintegrative disorder and pervasive developmental disorders not otherwise specified^[4]. The essential features of autism spectrum disorder are persistent impairment in reciprocal social communication and interaction and restricted repetitive patterns of behavior or interests or activities^[5].

According to centers for disease control and prevention (CDC), about 1 in 36 children has been identified with ASD and ASD is nearly 4 times more common among boys than among girls.^[6]

Exact cause of ASD is still under study. There is recurrence risk among siblings, and in twins. Closer spacing of pregnancies, advanced maternal and paternal age, extremely premature birth (<26 wk gestational age) as well as family members with learning problems, psychiatric disorders and social disability have been identified as risk factors. Multiple genes are viewed as involved in autism with studies supporting a role for both common and rare genetic variations contributing to the disorder.^[7]

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In Ayurveda even though there is no exact correlation for ASD, but by examining the features of ASD it shows similarities with the *Lakshanas* (features) of the disease *Unmada*^[8] and considering etiopathogenesis involved in ASD, there is need for medications and therapies which focus not only the higher centers of the brain, but the body with mind as such in order to address the core features of ASD.

MATERIALS AND METHODS

Case Introduction

A 9-year-old male child with his mother was presented in OP of *Kaumarabhruthyam* department of Vaidyaratnam Ayurveda College, Ollur Thrissur, with complaints of poor clarity of speech, impaired social interaction, repetitive hand and tongue movements and poor eye contact. The child has normal physical development appropriate for his age. He was a full-term baby (2nd child of NC parents), LSCS (due to reduced fetal movements), CSAB, with normal sucking and rooting and had a birth weight of 3.5kg.

The 1st episode of seizure was at the age of 6 months, which lasted for 5 minutes and he was taken to a nearby hospital and managed accordingly. Later he had recurrent episodes of seizures with a frequency of 2-3/week and duration less than 5 minutes. They consulted in various hospitals and were on AED up to the age of 5 years (seizures got subsided and medicines were stopped as advised by consultant from modern medicine). All his milestones were delayed and they consulted a physiotherapist and therapy was done for 2 years and the child started to walk without support from the age of 6 years. Speech therapy and occupational therapy was continuing and mild progress in speech (monosyllables) and fine grasping was attained.

Family History

It was a non-consanguineous parentage and neither parent had any health issues. The family is nuclear type and his father is working abroad. He is the 2nd child of parents and their 1st child is female who is now 15 years of age and has normal development and intellect. There is no history of such illnesses in the family.

Prenatal and Birth History

Mother had a history of abortion 6 years back (3 years after 1st pregnancy and got aborted in 2nd month of gestation due to reduced cardiac function). Maternal age at time of conception was 29 years and

she had mild hyperemesis in 1st trimester and was on antiemetic drugs and attended all antenatal visits regularly. Child was born out of emergency LSCS at 38 weeks of gestation when reduced fetal movements were observed. At birth the child cried soon after delivery and had a birth weight of 3.500 kg. Breastfeeding was initiated immediately and no other complications were observed.

Growth and Development

The Child's growth and development were reported to be normal up to the age of 6 months. Then the child started to have episodes of seizure which continued up to an age of 5 years. The child was completely bedridden at this period and all his developmental milestones were observed to be poor.

Characteristic Features

Child is presented with poor social interaction, eye contact. He conveys his needs by crying and seldom makes any sounds; he also has repetitive hand and tongue movements. He shows interest in music and enjoys listening to songs. He always prefers to move around and climb up the furniture and bowel control is not attained. He is not afraid of strangers and he used to touch them (pinches) and wanted to lift and hip carry him up.

Diagnosis and Assessment

In this case, diagnosis was made by clinical examination and validating the scores obtained by assessing the child by Indian scale for assessment of autism (ISAA).^[9] Progress of the child after treatment is assessed by the same scale, Indian scale for assessment of autism (ISAA). (Table 1.1)

Treatments

Primary goal of treatment is to improve the quality of life and functional independence of the child.

Treatments includes

- IP therapies (*Sneha* and *Sweda* therapies)
- Internal administration of medicines (*Samana* therapies)
- Diet modifications

Treatments were carried out in various phases. *Sneha Sweda* therapies along with internal medicines and a modified diet were followed for a period of 21 days. Then after discharge, new internal medicines were added and along with diet it is followed for a period of 82 days. Child is assessed with ISAA before and after the treatment.

Sneha Sweda therapies

Treatments	Medicines used	No. of days
Abhyangam (Sneha)	Lakshadi thailam and Ksheerabala thailam	3 days
Shiropichu (Sneha)	Lakshadi thailam and Ksheerabala thailam	7 days
Pathrapotali swedam (Sneha sweda)	Lakshadi thailam and Ksheerabala thailam	4 days
Shirodhara (Sneha sweda)	Chandanadi thailam and Ksheerabala thailam	7 days

Internal medicines

Internal medicines	Mode of administration
Drakshadi kashayam	7.5ml Kashayam +15ml lukewarm water, twice daily, half hour before food
Kombanchadi gulika	1/2 tablet twice daily with Kashayam
Vilwadi gulika	1 tablet +fresh turmeric juice +honey in the morning before food
Kalyana avaleha choornam	1/2 teaspoon powder mixed with honey and lemon juice and made to paste and rubbed and massaged over tongue. Once daily

Diet

Gluten free casein free (GFCF) vegetarian diet was followed throughout the treatment.

Internal medicines after discharge

All the internal medicines administered at time of IP management are continued for 41 days. Along with it additionally *Swarna bhasma* is added.

Swarna Bhasma: 1/2 tablet on alternate days with fresh turmeric juice and honey at bedtime for 82 days

Follow up after IP (Sneha Sweda) therapies

After discharge, the child was advised to continue diet as advised, *Shiropichu* (for 2 wks) and internal medicines for 82 days.

DISCUSSION

Drakshadi kashayam:^[10] *Drakshadi kashayam* is mentioned in the context of *Jwara chikitsa* (treatment of fever). It is indicated in many diseases including *Mada*, *Moorcha*, and *Brama*. And considering the mild and *Medhya* nature of the combination, it is selected as internal medicine, twice daily at a dose of 7.5ml *Kashayam* +15ml lukewarm water.

Kombanchadi gulika:^[11] *Kombanchadi gulika* is mentioned in *Vaidya tharakam* and is indicated in diseases including *Jwara*, *Vatavyadhi*, *Visarpa*, *Apasmara* etc.

Vilwadi gulika:^[12] *Vilwadi gulika* is mentioned in the context of *Visha* and it is indicated in various *Visha* (intoxicated) and gastrointestinal conditions and affliction of various *Bhutas*, *Grahas* etc. Efficacy of *Vilwadi gulika* in maintaining a healthy gut biomicrome was proved through various studies. And on account of the gut brain axis, it is selected as an internal medicine.

Kalyana avaleha choornam:^[13] *Kalyana avaleha choornam* is mentioned in *Bhaishajya Ratnavali vatavyadhi chikitsa* for the treatment of various speech

disorders. *Choornam* is made into a paste with lemon juice and honey and is rubbed over the tongue.

Swarna Bhasma^[14]: is *Rasa* preparation which is mentioned in various *Rasasasthra* textbooks like *Rasaratna sammuchayam* and *Rasatharangini*. It is made up of *Suddha swarna* (purified gold), *Suddha parada* (purified mercury) and *Suddha gandhaka* (purified sulphur). *Swarna bhasma* has *Madhura* (sweet) and *Kashaya* (astringent) *Rasa*, which predominantly showcases *Laghu* (light) and *Snigdha* (oily) *Guna*. It also has *Sheeta Virya* (cold potency) and *Madhura Vipaka* (sweet aftertaste). And it pacifies all three *Doshas* mainly the *Kapha*, *Vata* and *Pitta doshas* and has a positive effect on the various *Dhatus* (body tissues) which are *Rasa* (plasma), *Rakta* (blood), *Mamsa* (muscles), and *Shukra* (reproductive fluids). And with these extensive Ayurvedic properties, *Swarna Bhasma* increases physical power and enlightens not only our mind but also our physical body. It is *Ayurkaram* (promotes life expectancy, anti-aging), *Lakshmikaram* (brings good fortune), *Prabhakaram* (brings glow to the skin), *Dhikaram* (improves intellect), *Smrtikaram* (improves memory), *Akhilavyadhi vidhwamsi* (can be used in all disorders), *Punyam* (auspicious), *Bhutavesa prasanthi* (useful in psychiatric disorders). Hence by considering its therapeutic benefits this medicine is selected and advised to be taken with honey and turmeric juice.

IP therapies (Sneha Sweda therapies)

Abhyangam^[15]: The procedure of applying medicated oil over the whole body. It is a type of *Pravicharana sneha*^[15] and it is done as a pre-procedure to bring oleation to the body. The oil selected for *Abhyanga* is *Ksheerabala thailam*^[16] and *Lakshadi thailam*^[17] where *Lakshadi thailam* is indicated for *Unmada apasmara*

conditions and it also aids in attaining *Bala* (strength) *Pushti* (nourishment).

Ksheerabala thailam is indicated in all types of *Vatavyadhi* especially in *Vata Paittika* in nature.

Pathra potali swedanam is done as a *Sneha sweda* procedure. The same combination of *Thailam* used for *Abhyanga* is selected and it is administered with the aim of producing *Laghava* (lightness of body).

The main aim of *Abhyanga (Sneha)*, *Pathra potali Sweda (Sneha sweda)* is to bring about lightness of the body.

Shiropichu and Shirodhara: These are the types of *Murdhini thailam*^[18] (head oil). *Murdhini thaila* is indicated in diseases of the head and higher centers of

the brain in order to attain calmness. Considering hyperactivity of the child, combination of *Thaila* for *Shirodhara* is changed to *Chandanadi thailam*^[19] and *Ksheerabala thailam*. *Chandanadi thailam* is indicated for *Murcha*, *Apasmaram* and *Unmada* and is a *Medhya* combination. It helps to calm the child.

Diet

Use of gluten free casein free (GFCF) diet for children of ASD and ADHD (attention deficit hyperactivity disorder) are quite popular. Various studies have proved the effectiveness of the GFCF diet in improving communication, stereotyped movements, aggressiveness, language, hyperactivity, and tantrums in the ASD population.^[20]

Table 1: Assessment before and after treatment as per Indian Scale for Assessment of Autism (ISAA)

Item	Before treatment (score)	After treatment (score)
A) Social relationship and reciprocity		
1. Has poor eye contact	4	1
2. Lacks social smile	3	1
3. Remains aloof	3	1
4. Does not reach out to others	2	2
5. Unable to relate to people	3	2
6. Unable to respond to social /environmental cues	3	2
7. Engages in solitary and repetitive play activities	3	2
8. Unable to take turns in social interaction	3	2
9. Does not maintain peer relationships	3	2
B) Emotional responsiveness		
10. Shows inappropriate emotional response	3	2
11. Shows exaggerated emotions	4	1
12. Engages in self-stimulating emotions	4	2
13. Lacks fear of danger	4	2
14. Excited or agitated for no apparent reason	4	2
C) Speech - Language and Communications		
15. Acquired speech and lost it	4	3
16. Has difficulty in using nonverbal language or gestures to communicate	4	1
17. Engages in stereotyped and repetitive use of language	4	2
18. Engages in echolalic speech	3	2
19. Produces infantile squeals /unusual noises	4	2
20. Unable to initiate or sustain conversation with others	4	3
21. Uses jargon or meaningless words	4	2
22. Uses pronoun reversals	4	4
23. Unable to grasp pragmatics of communication (real meaning)	4	4

D) Behavior patterns		
24. Engages in stereotyped and repetitive motor mannerisms	4	1
25. Shows attachment to inanimate objects	3	1
26. Shows hyperactivity /restlessness	4	1
27. Exhibits aggressive behavior	4	1
28. Throws temper tantrums	4	1
29. Engages in self-injurious behavior	4	2
30. Insist on sameness	3	2
E) Sensory aspects		
31. Unusually sensitive to sensory stimuli	4	2
32. Stares into space for long periods of time	4	1
33. Has unusual vision	3	2
34. Has difficulty in tracking objects	3	2
35. Insensitive to pain	3	1
36. Responds to objects /people unusually by smelling, touching or tasting	4	1
F) Cognitive component		
37. Inconsistent attention and concentration	4	2
38. Shows delay in responding	4	1
39. Has unusual memory of some kind	2	2
40. Has 'savant' ability	2	2

Score 1	Score 2	Score 3	Score 4
Rarely - upto 20%	Sometimes: 21-40%	Frequently: 41-60%	Mostly 61-80%

CONCLUSION

ASD is a chronic condition leading to varying degrees of functional incapacity with no definite cause and complete management. People with ASD have different treatment needs and distinctive strengths and challenges. The goal of current treatments is to lessen symptoms that affect daily life and quality of life. Parents of children with ASD are searching for a new alternative in managing ASD. Ayurvedic treatments, medicines, diet modifications, are quite promising for the same.

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***Address for correspondence**

Dr. Nivya K R

House Surgeon,
Vaidyaratnam Ayurveda College,
Ollur, Thrissur, Kerala.
Email: nivyakr1997@gmail.com

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