

The Effect of Siddha Medicine in Treating Autism Spectrum Disorder: A Case Report

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ABSTRACT

The heterogeneity, complexity, co-occurring conditions, and lifelong impact are unique features of Autism Spectrum Disorder (ASD), making it a challenging disorder to diagnose and treat. The Siddha medicinal system offers a comprehensive approach to health that extends beyond the corporeal realm. It encompasses emotional, social, spiritual, and intellectual aspects of well-being. Siddha medicine is unique in its holistic approach to healthcare, emphasising the overall well-being of an individual rather than just treating symptoms. It focuses on balancing the body's three humours, or doshas, to restore equilibrium. This case report describes a 10-year-old male with behavioural complications and Gastrointestinal (GI) symptoms diagnosed with Mantha sannai (ASD). The patient received specialised Siddha interventions, including *Amukkara chooranam*, *Brahmi nei*, *Manthaennai*, and *Varmam* (a form of external manipulation). The study evaluated the treatment outcome over 90 days using the Indian Scale for Assessment of Autism (ISAA). The child showed significant improvement in all areas of the ISAA scale, including social relations, language and communication skills, behavioural patterns, emotional responsiveness, cognitive functions, and sensory perception. The overall score, previously indicating moderate autism at 159, improved to 100, indicating mild autism, after treatment. This case report contributes to the scientific literature by providing novel insights into alternative medicine treatments for individuals with ASD. These treatments can help them lead satisfying lives and enhance their quality of existence.

Keywords: Amukkara chooranam, Behavioural issues, Brahmi nei, Gastrointestinal symptoms, Mantha sannai

CASE REPORT

A 10-year-old male child presented to the Department of Paediatrics at the National Institute of Siddha (Chennai) with the following complaints: poor eye contact, lack of social interaction, repetitive peculiar sounds, limited communication using gestures, unresponsiveness to commands, unpredictable emotional expressions, and infrequent bowel habits since the age of two. The child's parents were non-consanguineous, and the mother was 25 years old during pregnancy. The child was born preterm at 35 weeks with a birth weight of 1.8 kg due to oligohydramnios, delivered by Lower Segment Caesarean Section (LSCS). The child spent one week in the Neonatal Intensive Care Unit (NICU) without any significant postnatal events. At the age of two, vocalisations began, but by three years old, no meaningful words were developed. This was followed by poor eye contact, a preference for solitude, and other similar behaviours. The child's father had a history of speech delay. The child received routine vaccinations and has been undergoing behavioural therapies while taking Risperdal (risperidone) 0.5 mg once daily, but there has been no improvement in symptoms.

On clinical examination, the child appeared well-built and nourished. General examination showed stable vital signs with a pulse rate of 88/minutes, blood pressure of 90/60 mmHg, and respiratory rate of 24/minutes. In terms of higher intellectual functions, the child was conscious but not oriented to time and place. Unusual memory and disturbed sleep patterns were observed. Anthropometric measurements showed a weight of 49 kg, height of 144.5 cm, head circumference of 20 cm, chest circumference of 33 cm, and mid-arm circumference of 10.5 cm. Routine blood investigations revealed no abnormalities. Magnetic Resonance Imaging (MRI)-brain and Electroencephalogram (EEG) results were normal, and vision and hearing tests showed no issues. Heavy metal and trace element levels obtained through analysis are presented in [Table/Fig-1]. The diagnosis of Autism Spectrum Disorder (ASD) was made

based on a detailed history, laboratory investigations, interaction with the subject as per ISAA [1], and ruling out other conditions such as Attention Deficit Hyperactivity Disorder (ADHD), Intellectual Disability (ID), language disorders, and anxiety disorders.

Heavy metals and trace elements	Values
Manganese (4.7-18.3 ng/mL)	24.32
Chromium (0-0.3 ng/mL)	0.4
Arsenic (0-12 ng/mL)	2.28
Bismuth (<50.0 ng/mL)	3.68
Cadmium (0-4.9 ng/mL)	0.8
Copper (80-180 µg/dL)	115.76
Iron (33-193 µg/dL)	47
Zinc (0.66-1.10 g/mL)	0.83
Lead (0-5 µg/dL)	3.48
Mercury (0.0-9.0 ng/mL)	1.32
Nickel (0.0-2.0 ng/mL)	2.0
Selenium (70-150 µg/L)	132
Thallium (0-5 ng/mL)	0.72

[Table/Fig-1]: Levels of heavy metals and trace elements.

The patient was prescribed *Amukkara chooranam* [2], 1 gm twice a day with honey; *Brahmi nei* [3], 5 mL twice a day; *Manthaennai* [3], 3 mL twice a week at bedtime as internal medicine; and *varmam* [4] as external manipulation [Table/Fig-2] for 90 days. Pressure was applied at the varma points for 1-3 minutes with the centre finger. The diet recommended is mentioned in [Table/Fig-3] [5]. After 90 days, a comprehensive assessment was conducted by ISAA [1] to closely examine the progress of the case. The scores were interpreted based on observed behavioural characteristics in each domain, with scores ranging from 1 to 5. A score of 1 indicates rarely

(upto 20%), which is normal for their age and socio-educational background. A score of 2 indicates occasional occurrence (21-40%), within normal limits but may cause concern. A score of 3 indicates frequent occurrence (41-60%), which is disabling. A score of 4 indicates mostly occurring (61-80%), requiring assistance as it significantly hampers daily activities. A score of 5 indicates complete dependence on activities of daily life.

Varma points	Location
Thilartha varmam	1 grain size below the midpoint of both the eyebrows
Seerunkolli	Lambda of skull
Sevikuthi	In the depression anterior to tragus
Ottu varmam	Mid of the mandible
Uchi varmam	Bregma of skull
Poigai varmam	In the region where head and superior part of helix (Auricle) joins
Natchatra varmam	1 grain below the outer canthus of the eye

[Table/Fig-2]: Varma points and their location.

Do's	Dont's
Rice-boiled, millets, Barley, Flax seeds, Garlic, green vegetables, thirithodasamaporuttkal (Fenugreek, asafetida, pepper, turmeric, cumin seeds, dry ginger, cardamom, garlic)	Wheat, peanuts, almond, cashew, lady finger, beetroot, potato, onion, mushrooms, egg, non veg. Foods except mutton, coconut, milk, milk products, artificial edible food colors, preservatives and flavours

[Table/Fig-3]: Do's and don'ts for dietary advice.

On the 0th, 45th, and 90th day, the resultant data was analysed. Improvement was observed in all domains, including social relationship and reciprocity (43%), social responsiveness (18%), speech language and communication (34%), behavioural patterns (41%), sensory aspects (48%), cognitive component (35%), and overall improvement (37%). The child's overall score on the 0th day was 159, on the 45th day it was 152, and on the 90th day it was 100, indicating a progression from severe autism to mild autism [Table/Fig-4].

Assessment criteria of Indian Scale for Assessment of Autism (ISAA)	Day 1	45 th Day	90 th Day	Improvement in %
I Social relationship and reciprocity				
Has poor eye contact	5	5	2	60
Lacks social smile	5	5	2	60
Remains aloof	4	4	2	50
Does not reach out to others	5	4	3	40
Unable to relate to people	5	4	3	40
Unable to respond to social/environmental cues	5	5	2	60
Engages in solitary and repetitive play activities	3	3	3	0
Unable to take turns in social interaction	4	4	3	25
Does not maintain peer relationships	4	4	3	25
Total	40	38	23	43
II Emotional responsiveness				
Shows inappropriate emotional responses	5	5	3	40
Shows exaggerated emotions	4	4	3	25
Engages in self-stimulating emotions	3	3	3	0
Lacks fear of danger	5	5	5	0
Excited or agitated for no apparent reason	5	5	4	20
Total	22	22	18	18
III Speech -language and communication				
Acquired speech or lost it	3	3	2	33
Has difficulty in using non verbal language or gestures to communicate	3	3	3	0
Engages in stereotyped and repetitive use of language	4	4	3	20

Engages in echolalic speech	5	5	4	25
Produces infantile squeals/unusual noises	5	5	1	80
Unable to initiate or sustain conversation with others	4	4	2	50
Uses jargon or meaningless words	4	4	2	50
Uses pronoun reversals	4	3	3	25
Unable to grasp pragmatics of communication (real meaning)	3	3	3	0
Total	35	34	23	34

IV Behaviour patterns				
Engages in stereotyped and repetitive motor mannerisms	3	3	2	33
Shows attachment to inanimate objects	2	2	2	0
Shows hyperactivity/restlessness	3	2	2	33
Exhibits aggressive behaviour	3	3	2	33
Throws temper tantrums	3	3	1	67
Engages in self- injurious behaviour	3	2	1	67
Insists on sameness	5	5	3	40
Total	22	20	13	41

V Sensory aspects				
Unusually sensitive to sensory stimuli	5	5	2	60
Stares into space for long periods of time	5	5	1	80
Has difficulty in tracking objects	5	5	3	40
Has unusual vision	2	2	2	0
Insensitive to pain	2	2	2	0
Responds to objects/People unusually by smelling, touching or tasting	4	4	2	50
Total	23	23	12	48

VI Cognitive component				
Inconsistent attention and concentration	4	3	2	50
Shows delay in responding	4	4	2	50
Has unusual memory of some kind	4	4	3	25
Has 'savant ability'	5	4	4	20
Total	17	15	11	35
Grand Total	159	153	100	37
No autism <70	0	0	0	
Mild autism 71 to 106	0	0	100	
Moderate autism 107 to 153	159	153	0	
Severe autism >153	0	0	0	

[Table/Fig-4]: Assessment of symptoms on Indian Scale for Assessment of Autism (ISAA).

The adherence and tolerability of the intervention were assessed through ongoing monitoring and evaluation, including behavioural tracking and direct observation of the child. No negative side-effects or adverse events were observed. The child continues to receive ongoing follow-up treatment with Siddha medicines as needed when gastrointestinal symptoms worsen. However, there has been no apparent regression in behavioural symptoms despite discontinuing Siddha medicine usage.

DISCUSSION

The ASD is a complex condition that affects cognition and physiology. According to the Siddha text *Balavagadam*, it is closely connected to "mantha sann" [6]. Siddhars explain that ASD's origins can be traced back to infancy and childhood, where "mantha noi" (mandham), caused by acid fermentation in the stomach, leads to neurological abnormalities [7]. Disturbances in the GI tract play a crucial role in the development of neurodevelopmental disorders like ASD [8].

This therapeutic regimen aims to restore balance to the gut microbiota and alleviate "mandham." ASD is differentiated from ADHD, ID,

language disorders, and anxiety disorders through a comprehensive evaluation of developmental history, social communication skills, sensory processing, and repetitive behaviours. ADHD is characterised by inattention, hyperactivity, and impulsivity, while ID involves intellectual deficits and adaptive behaviour limitations. Language disorders affect receptive and expressive language skills, and anxiety disorders involve excessive fear or worry [9].

The ISAA, a reliable standardised tool, was used to assess and showed a standard decline in autism symptoms before and after treatment. Similar improvements were observed in a study by Shinde RV et al., [10]. Blood samples from the child indicated slightly elevated concentrations of trace elements manganese and chromium, suggesting a possible association with ASD. This finding aligns with a previous study that reported a significant interactive correlation between GSTP1 polymorphisms and BMC levels of manganese in Jamaican children with ASD [11].

The key ingredient of the amalgamation, *Amukkara chooranam*, is *Withania somnifera*, which shows a remarkable capacity to inhibit neurological aberrations [12]. *Mantha ennai*, a paediatric Siddha formulation, aims to sustain Agni (digestive fire) in the stomach, improve digestion, act as a laxative, and eliminate the root cause of the disorder in the body. *Brahmi nei*, a well-established brain tonic, exhibits the ability to cross the blood-brain barrier, rejuvenate the mind, enhance memory, and directly influence the quality of consciousness [13]. Varmam therapy is based on the manual stimulation of vital life energy points through various pressure techniques. This stimulation of essential vital energies enhances the “*Anthakaranam*” (four intellectual faculties, such as *manam*, *puthi*, *sitham*, *agangaram*), thereby alleviating “*mandham*” in the mind.

Emerging research has highlighted the significance of the interplay between the gut microbiota and host tissues of the GI tract in maintaining host health. This research has shown changes in metabolic fluxes in the small intestine of CONV-R and GF in response to gut microbiota and identified the likely associations of these differences with transcriptional changes [14]. Consequently, in this study, the child showed significant improvement by rectifying the gut microbiota through Siddha medicine, warranting further research.

CONCLUSION(S)

The treatment principles, according to the Siddha system of practice, have improved the quality of life for children by playing a vital role in the gut-brain axis. Therefore, there are innovative treatments and procedures in the Siddha system of medicine that have therapeutic potency in treating various ailments, especially neurobehavioural disorders. As a result, this case study promotes further research.

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