



## AYURVEDIC INTERVENTIONS IN AUTISM SPECTRUM DISORDERS –A CASE SERIES

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### ABSTRACT

The prevalence of Autism Spectrum Disorder has increased to 1 in 68 children. With impaired social interactions, impaired language and stereotypic movements as the classic triad of the condition, this social stigma is known to have no satisfactory treatment options till now. Applied behavior analysis (ABA), yoga therapy, music therapy, nutritional modifications and certain drugs have shown improvements in some aspects of the disease in various case studies but a significant result has not yet been attained. In Ayurveda all childhood autism cases come under the category of either *Vatakaphajaunmada* or *Vatapaikkunmada*. A case series was developed with 10 cases having the following characteristics. The diagnosis of all the cases was done with Childhood Autism Rating Scale (CARS) and the treatment outcome was measured by Autism Treatment Evaluation Checklist (ATEC). Clinical features of *Unmada* were also considered for the diagnosis and assessment of all the cases. The Ayurvedic treatment protocols for the cases selected were according to *Dosha* predominance of the condition at that time. All of the children considered for the case series were receiving speech as well as psychotherapies and appropriate dietary advice and assessment was done after three months. The change in CARS score was highly significant at 0.05% level ( $P < 0.0005$ ). Also the change in ATEC and sensory parameters was significant at 1% level ( $P < 0.01$ ). The treatment has significant effect on sociability ( $t = 2.662$ ,  $P < 0.05$ ) and physical features ( $t = 2.436$ ,  $p < 0.05$ ). Speech development was not statistically significant. This points towards the necessity of mainstreaming Ayurvedic treatment for autism spectrum disorders.

**KEYWORDS:** Autism Spectrum Disorders, *Vatakaphajaunmada*, *Vatapaikkunmada*.

### INTRODUCTION

Autistic Spectrum Disorders are a grave problem of the present era that has shown an alarming increase in the past decade. The prevalence of this condition in the United States is 1 in 68 children<sup>1</sup> and in India its incidence rate is calculated as 1 in 90, 666 or 11, 914.<sup>2</sup> Though the factors like genetic problems, autoimmune conditions and neurological abnormalities have been identified as the causes of ASD, no definite reason is so far identified for the disorder till date. Various new theories about the cause of Autistic Spectrum Disorders have also been developed. Among children conceived using ART, about 0.8% of those born as singletons (only one baby carried during the pregnancy) and about 1.2% of those born as a twin or multiple were diagnosed with ASD. Children conceived using ART were more likely to be diagnosed with ASD if intracytoplasmic sperm injection (ICSI) was used compared to conventional in vitro fertilization<sup>3</sup>.

The major clinical features of the condition as per DSM V criteria are diminished social interaction, impaired language and restricted repetitive behaviors (RRB). Children with autism have restricted interpersonal communication and engagement due to their limitations in creative, playful pretend<sup>4</sup>. Impaired use of multiple nonverbal behaviors like eye-to-eye gaze, facial expression, body postures and gestures, failure to develop peer relationships, lack of spontaneous seeking to share enjoyments, odd prosody or intonation, echolalia, pronoun reversal, nonsense rhyming and other idiosyncratic

language are some of the main clinical features. Their intellectual functioning may vary from mental retardation to superior intellectual functioning. The augmented mental functioning may be evident in areas such as solving complicated puzzles, art, or music and is entitled as splinter skills and savant behavior<sup>5</sup>.

Risperidone and aripiprazole are the only FDA-approved medications for ASD, and they are approved only for the treatment of irritability in 5–16 year olds with ASD<sup>6</sup>. No medications are currently established to treat ASD core symptoms. Supplemental melatonin has shown promise in treating sleep onset insomnia in children with autism spectrum disorders (ASD)<sup>7</sup>. Behavior modification therapies like applied behavior analysis (ABA) has the most empirical support for a single treatment, with documented improvements in language, social, play, and academic skills, and reduction in severe behavioral problems<sup>8</sup>. However, behavioral treatments are time and staff intensive, requiring up to 30–40 hours of treatment per week for several years by trained staff working directly with the child and typically focusing on one or a few behaviors at a time. In a study conducted in 30 subjects diagnosed with ASD in the Developmental Eclectic Approach to Language Learning (DEALL) Communication (Com DEALL) units in Bangalore, statistically significant increase in all eight developmental domains and statistically significant decrease in symptoms as measured by the CARS, were seen<sup>9</sup>. The efficacy of Picture Exchange Communication System (PECS) as an adjunct treatment to

behavioral management has also been studied<sup>10</sup>. Malhotra et al reported experience with psychological intervention with parents of autistic children. Their treatment methods were drawn from Treatment and Education of Autistic and related Communication handicapped Children (TEACCH) protocol<sup>11</sup>. In a study using Integrated Approach to Yoga Therapy (IAYT) for two years, it was observed that there were significant improvements in imitation and other skills, and in behaviour at home and family relationships. The presumed role of mirror neuron activation has been hypothesized for this effect<sup>12</sup>. Though all these studies have a nominal effect on the management of ASD, none of them have been accepted as the exact treatment. The behavior and yoga therapies are very time consuming and difficult to practice in Autistic children. Here comes the role of Ayurvedic management of ASD.

*Unmada* is a term that represents broad classes of mental ailments in Ayurvedic literature that covers Autism Spectrum Disorders too. *Unmada* is explained in Ayurveda as the derangement in the *Manas* (mental functioning), *Budhi* (application of the acquired knowledge), *Samjna* (perceptions), *Jnana* (experiences), *Smriti* (memory), *Bhakti* (emotional adhesions), *Seela* (conditioned activities), *Cheshta* (behavior) and *Achara* (socio cultural activities)<sup>13</sup>. The clinical features of Autism Spectrum Disorders merge well with that of *Unmada*. The major cause for the above, explained in Ayurveda are the *Beejadushti* (genetic factors) which may have occurred due to the non-congenial diet and regimen of the parents before conception or the improper diet and regimen of mother and psychological stress during pregnancy (*Garbhaja*) or unknown causes explained as a curse or the after effects of the unrighteous deeds done in the past (*Prabhavaja*). The non-congenial diet and regimen and

psychological stress of children in their infancy will have an add on effect on the above mentioned causes<sup>14</sup>.

## MATERIALS AND METHODS

The present study is a case series consisting of 10 patients aged between 3 and 8 years selected from the patients attended the OPD of the Department of Kaumarabhritya, Government Ayurveda College, Thiruvananthapuram during the period March 2015-March 2016 with complaints of impaired social interaction, language and stereotypic movements. The patients were diagnosed as autism spectrum disorders by using the Childhood Autism Rating Scale (CARS)<sup>15</sup>. Autism treatment evaluation checklist (ATEC) was used for the assessment of severity of their clinical features in four aspects like sociability, speech and language, sensory aspects and physical features<sup>16</sup>.

Specific treatment protocols were selected for the management of the patients by considering the clinical features of *Unmada* and the *Dosha* predominance. Of the selected ten cases, seven children were identified to have *Vatakaphajaunmada* and the other three had *Vatapaittikaunmada*. The treatment consisted of two weeks of OP management which included *Deepana* (enhancing digestion and absorption) followed by *Sadyasnehapana* (giving medicated ghee to children in small quantity along with food)<sup>17</sup>. After that three weeks of IP management including *Abhyanga andooshmasweda* (oil massage and fomentation), *Yogavasti* (medicated enema) and *Shirodhara* (slow pouring of oil on head) was done with concerned medicines for each group. All the patients were then given three weeks of *Shirolepa* (herbal paste application on head) to be done at home and later one month of internal medication only and followed up. The patients were assessed before and three months after the treatment using CARS and ATEC scale.

**Table 1: Treatment protocol of patients**

S. No.	Treatment	Medicine		Duration
		<i>Vatakaphaja</i>	<i>Vatapaittika</i>	
1	<i>Deepanam</i>	<i>Ashtachoorna</i> <sup>18</sup>	<i>Ashtachornam</i>	5-15g with honey before food 5 days
2	<i>Sadya Snehapana</i>	<i>Kalyanaka ghrita</i> <sup>19</sup>	<i>Tiktaka ghrita</i> <sup>20</sup>	15-30 ml twice daily with <i>Peya</i> and <i>Saindava</i> for 10 days
3	<i>Abhyangamooshmasweda</i>	<i>Vatasini tailam</i> <sup>21</sup>	<i>Ksheerabala tailam</i> <sup>22</sup>	3 days
4	<i>Yogavasti</i>	<i>Pippalyadianuvasana tailam</i> <sup>23</sup>	<i>Madhuyashtyadi taila</i> <sup>24</sup>	8 days
5	<i>Shirodhara</i>	<i>Vatasinitailam</i>	<i>Chandanadi tailam</i> <sup>25</sup>	7 days
6	<i>Shirolepam</i>	<i>Mustatakram,</i> <i>Rasnadichoornam,</i> <i>Amalakichoornam</i>	<i>Balasoaladi lepam</i> <sup>26</sup>	21 days
7	<i>Samanachikitsa</i>	<i>Manasamitra vatakam</i> <sup>27</sup>	<i>Manasamitravatakam</i>	1-0-1
		<i>Guloochyadi kashayam</i> <sup>28</sup>	<i>Chandanadi kashayam</i> <sup>29</sup>	30 ml twice a day before food
		<i>Kalyanakaghrita</i>	<i>Tiktakaghrita</i>	10ml twice daily after food

## RESULTS

The data on pretest and post test score were collected for various parameters and calculated the mean and SD. The statistical significance of observed mean difference was tested using paired t test (The details are shown in the Table 2). The change in CARS score was highly significant at 0.05% level ( $P < 0.0005$ ). Also the change in ATEC and sensory parameters was significant at 1% level ( $P < 0.01$ ). The treatment has significant effect on sociability ( $t = 2.662$ ,  $P < 0.05$ ) and physical features ( $t = 2.436$ ,  $p < 0.05$ ). But there do not exist any significant effect due to treatment on speech ( $t = 0.873$ ,  $P > 0.05$ ). The clinical features explained in *Unmada* like anorexia, excess salivation, and constipation in *Vatakaphaja*

patients and increased sweating, excess thirst and self-biting in *Vatapaittika* patients has shown considerable reduction in clinically notable levels.

**Table 2: Data and test of significance (paired t test) on effectiveness of treatment on various study parameters**

Variable	Test	Mean	SD	t	df	P
Speech	BT	20.50	4.86	0.873	9	0.405
	AT	19.40	5.10			
Sociability	BT	20.10	10.14	2.662	9	0.026
	AT	13.70	8.33			
Sensory	BT	21.60	6.20	5.274	9	0.001
	AT	14.80	5.37			
Physical	BT	16.60	6.93	2.436	9	0.038
	AT	12.40	8.78			
ATEC	BT	78.70	21.49	4.578	9	0.001
	AT	60.40	23.57			
CARS	BT	34.85	7.13	5.401	9	0.000
	AT	28.95	7.18			

## DISCUSSION

The improper diet and regimen in children leads to *Rasadushti*. The main function of *rasa* being *Preenana* (*Preenanamchittapreetihi*)<sup>30</sup> which can be considered as the general wellbeing of the individual both physically and mentally. Thus *rasa* can be considered as all the factors that help to maintain the homeostasis of the body. Hence *Rasadushti* especially in those who are prone to psychologic disturbances (with *Heenasatwa*) due to hereditary (*Sahaja*), improper food and stress during pregnancy (*Garbhaja*) or other unknown factors (*Prabhavaja* or *Poorvajankarma*) leads to *Unmada* in children. The treatment aims at alleviating the *Rasadushti* in the body which is present throughout the body by *Sodhana* in the form of *Vasthi* preceded by *Snehana* and *Swedana*. The functions of cognition, emotions and sensory perceptions are mainly controlled by *Praanavata*. So *Shirodhara* and *Shirolepa* are done to enhance the proper functioning of *Praanavata*. After that *Medhya rasayanas* are given to improve the speech and cognition. Special care was taken to maintain proper digestion using *Deepana* drugs keeping in mind the gut brain axis theory. *Pathyaahara* and *Vihara* (congenial diet and regimen for the condition) was also advised for each patient.

The above results show that there is significant improvement in the sociability, sensory and physical conditions of the patients though there is no much improvement in the speech development. The patients were also given psychotherapy and speech therapy in the hospital. Language development is a complex procedure which needs more time for development. Further treatment is necessary for improving the speech and other parameters of the children. The current observations are based on a case series developed from selected clinical case records of ten patients, still the Ayurvedic interventions adopted here for various categories of cases has shown statistically as well as clinically significant results which is very infrequent in Autistic children with

natural progression. The assessments were done after just three months of treatment which is a very short period of management when ASD is considered. Further management will definitely improve the speech and social interaction of such children. The Ayurvedic intervention will increase the attention and social interaction which will help the children to engage more in other therapies. Also it is observed clinically that early identification and Ayurvedic intervention along with speech and behavior therapies will help mild and moderate ASD children to have a normal schooling.

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