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AYURVEDIC MANAGEMENT OF SENSORY PROCESSING DISORDERS IN CHILDREN WITH AUTISM – A SINGLE CASE REPORT

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ABSTRACT

Introduction: Sensory Processing Disorders (SPD) is a condition in which a child has difficulty in organizing and integrating sensory information for use. As a result, a child with SPD experiences challenges in acting on and adapting to sensory information, making it difficulty to participate in and enjoy many everyday tasks.[1] Rate of Sensory Processing Dysfunction may be as high as 90% in individual with autism.[2] Individuals with autism often exhibit a typical sensory processing including sensory seeking, sensory avoiding, and sensory modulation difficulties. From an *Ayurvedic* perspective, these features correlate with *Indriyapradoshaja Vikaras* arising due to uncoordinated activity of *Manas* or dysfunction of *Manovaha Srotas in Indriya Adhisthana*. **Materials and Methods:** A 4-year and 9-month-old male child was diagnosed with Autism Spectrum Disorder(ASD) based on DSM-5 criteria and assessed using the Child Sensory Profile–2, which revealed sensory dysfunction across the avoiding/avoider, sensitivity/sensor, and seeking/seeker response patterns, predominantly affecting the tactile, movement, oral, conduct, social–emotional, and attentional domains. The child was managed with *Panchakarma* treatment that included *Yoga Basti*, *Sarvanga*

Abhyanga, Sarvanga Dhara, and Shirodhara. followed by internal medication *Amalaki Avaleha* as a discharge medication. It was administered over a period of 60 days, along with dietary and lifestyle modifications and a follow-up assessment done on the 0th, 30th, 60th, and 90th day to evaluate the sustained effect of therapeutic outcomes. **Results:** After 90 days of intervention, significant improvement was observed across all sensory processing domains. Touch (26→16), movement (30→17), and oral processing (38→20) showed marked reduction, with attention nearing normalization (26→22). Conduct responses decreased (33→28) and social-emotional scores improved (37→31). Sensory quadrant analysis also showed overall improvement: registration (39→29), sensitivity (47→35), avoiding (52→43), and seeking (67→53), indicating reduced sensory-related behavioural difficulties. **Discussion and Conclusion:** An autistic child with SPD having sensory dysfunction in touch, movement, oral, conduct, social emotional and attentional domains was managed effectively with *Ayurvedic* line of treatment both *Shodhana* and *Shamana*. The therapy was safe, well tolerated and no adverse effects were noted. Though limited by its single-case design, this report highlights the potential role of *Ayurveda* in managing sensory processing disorders in children with autism.

KEYWORDS: Sensory Processing Disorders, *Indriyapradoshaja Vikaras*, Autism, Child Sensory Profile-2, DSM-5.

INTRODUCTION

Sensory Processing Disorders (SPD) is a condition in which a child has difficulty organizing and integrating sensory information for use. As a result, a child with SPD experiences challenges in acting on and adapting to sensory information, making it difficult to participate in and enjoy many everyday tasks.[1] Rate of Sensory Processing Dysfunction may be as high as 90% in individual with autism.[2] The abnormal sensory reactivity is associated with severity of autism, poor functional outcomes and behavioural difficulties including anxiety disorders across the lifespan. Early characterization of sensory abnormalities would be of tremendous value for guiding therapeutic interventions. But in practice it is observed that the prime focus of parents and medical fraternity in the management of autism lies in the initiation of speech and correction of social behaviour, Sensory Dysfunction being paid less attention most of the times. Sensory Integration Therapy is a gold standard approach aimed at improving Sensory Processing in such children. No pharmacological intervention has been

tried so far; therefore, there is a dare necessity to explore a pharmacological intervention in order to influence the sensory pathways positively.

Literature review

Sensory Processing Disorders and *Indriyapradoshaja Vikaras*

Sensory Processing Disorders is a condition in which a child has difficulty organizing and integrating sensory information for use. As a result, a child with SPD experiences challenges in acting on and adapting to sensory information, making it difficulty to participate in and enjoy many everyday task.

Children with SPD often exhibit atypical responses to sensory stimuli, which may manifest as hyper-responsiveness, hypo-responsiveness, or sensory seeking behaviours. These disturbances significantly affect daily functioning, including motor coordination, attention, emotional regulation, social interaction, and participation in age-appropriate activities.

SPD is frequently observed in children with autism spectrum disorder (ASD), attention deficit hyperactivity disorder (ADHD), and other developmental conditions. Research suggests that altered sensory modulation and integration arise due to dysfunction in central sensory processing pathways, particularly involving cortical and subcortical structures responsible for sensory discrimination, registration, and adaptive responses. Persistent sensory dysregulation has been associated with behavioural challenges, impaired learning, emotional disturbances, and reduced quality of life in an older child posing a social challenge to the parents and caregivers.

Ayurvedic literature provides a conceptual framework that closely parallels the modern understanding of sensory processing disorders. SPD can be considered as *Indriyapradoshaja Vikaras* mentioned in *Ayurveda* arising due to uncoordinated activity of *Manas* or dysfunction of *Manovaha Srotas in Indriya Adhisthana*.

where there is *Upatapa* (*Vaikalya* - Partial loss of function or altered function) and *Upaghata* (*Nasha*Total loss of Functions, may be Permanent or Temporary) of *Indriyas*. *Upatapa* and *Upaghata* refers to the dysfunction of sensory pathways.[3]

In the head, the senses, the channels carrying sensory and vital energy, are situated like the rays of the sun.[4] So *Indriyapradoshaja Vikaras* can be treated on the lines of *Shiromarma*

Chikitsa[5,6] (*Abhyanga, Sweda, Upanaha, Snehapana, Nasya, Dhuma)* as well with *Rasayana Yogas* which facilitate the restoration of sensory functions.

MATERIALS AND METHODS

Case Introduction

A 4.9-year-old male child was brought to the OPD of the *Kaumarabhritya* department, SSCASRH Bangalore, with concerns of poor social communication, poor attention span, Hyperactivity, poor eye contact and peer relationship along with aggressive behaviour, unaware of temperature changes, pain and oblivious to messy hands, looks for opportunities to fall and unaware of danger, preference for eating specific texture and gets lost easily noticed since the age of 2.5 years.

History of present illness

The child, born to non-consanguineous parents delivered through LSCS with a birth weight of 3480g and cried immediately after birth, was apparently developmentally normal until the age of 2.5 years, after which a gradual onset of poor social communication, Hyperactivity, poor eye contact and peer relationship along with Sensory abnormalities as mentioned above. The child received allopathic medications along with occupational, speech, and behavioural therapy, followed by homeopathic treatments, with no significant improvement. Due to persistent sensory issues the child was brought to *Kaumarabhritya* OPD for further evaluation and management of the above complaints.

Family History

Child was born to a non-consanguineous parent.

No H/O of similar illness in the family.

Prenatal, natal and post-natal history

Mother conceived at the age of 26 years, had regular antenatal checkups and took, iron, folic acid supplements as suggested. There was no history of Gestational Diabetes, Hypertension, Eclampsia. Child was on exclusive breastfeeding till 6 months then continued till 1.5 years along with supplementary food. Currently child is fed with normal home cooked meal. Sleep, Appetite, bowel movements and micturition normal. No history of hospital isolation for any critical illnesses.

General examination

The child is well nourished but irritable, hyperactive with social and communication deficits.

Milestones

Gross motor (except neck holding attained at the age of 6months), fine motor, social/adaptive//personal development attained as per age. Had delay in Language and speech development.

Ashtasthana Pareeksha

Nadi – Vatapittaja

Jihwa - Alipta

Mala - Once in 2-3 days

Mootra - Prakruta

Shabdha – Vikruta (Sensitive to high pitched sounds)

Sparsha – Prakruta

Druk – Prakruta

Akruti – Prakruta

Dashavidha Preeksha

Prakruti – Vatapittaja

Vikruti – Pittavata Pradhana

Sara – Madhyama

Samhanana – Madhyama

Satmya – Sarvarasa Satmya

Satva – Madhyama

Ahara Shakti – Madhyama

Vyayama Shakti – Madhyama

Vaya – Baala

Srotopareeksha

Rasavaha srotas – Ashraddha, Tama Pravesha

Manovaha srotas – Dhi Vibhrama, Paryakula Drishti Adhiratha. Na achara Dharma.

Systemic examination

Respiratory, Cardio-vascular, Gastrointestinal, Urinogenital and Musculo-skeletal examination findings showed no abnormalities. On Central Nervous System examination child was conscious, well oriented to time, place and person with inattentive, poor eye contact, and response, inefficient in both verbal and non-verbal communication. Examination of Cranial nerves, Motor system, Reflexes and gait were normal.

Assessments

The child was evaluated based on DSM – 5(Diagnostic and Statistical Manual of mental disorders, 5th edition)[7] criteria, the child met the diagnostic features of ASD, characterized by deficits in social communication, restricted and repetitive behaviours, and sensory abnormalities and Diagnostic assessment using ISAA (Indian Scale for Assessment of Autism) 117 indicating moderate autism.

Child Sensory Profile – 2[8] summery – Child showed responses "Just like majority of others" in Auditory,[11] Visual.[10] and Body position processing,[8] "More than others" in Touch,[26] Social emotional and Attentional response associated with sensory processing,[37-52] "Much more than others" in Movement,[30] Oral sensory and Conduct associated with sensory processing,[38,33] In the sensory quadrants responses were "Just like others" in Registration/Bystander,[39] "More than others" in Avoiding/Avoider,[52] Sensitivity/Sensor,[47] "Much more than others" in Seeking/ seeker.[67] This assessment suggested moderate to severe sensory processing issues.

Diagnosis

Indriyapradoshaja Vikaras [*Sparshanendriya & Rasanendriya Pradoshaja Vikaras*] along with *Gati Viparyaya.*

Treatmemt

DATE	TREATMENT PRINCIPLE	MEDICINES	TIMELINE
03/02/25 – 10/02/25	*Sarvanga Abhyanga*	*Brahmi Taila*	08 days
03/02/25 – 10/02/25	*Sarvanga Dhara*	*Balamoola Kwatha*	08 days
03/02/25 – 10/02/25	*Shirodhara*	*Takra*	08 days
03/02/25 – 10/02/25	*Yoga Basti*		08days
	Anuvasana Basti	*Panchagavya Ghrita -30ml*	

	Niruha Basti	*Madhu – 15ml* *Saindhava – 123mg* *Sneha – Panchagavya Ghrita – 30ml* *Kalka – Shatapushpa – 2g* *Kwatha- Sariva + Brahmi+Jatamansi kwatha – 90 ml* *Total – 130 ml*	

Discharge medications[90]

1. *Amalaki Avaleha* – 1tsp – 0 – 1tsp with milk for 60 days.

Time – *Pragbhakta* (Before food, morning and evening).

Reference – Mentioned in *Charaka Chikitsa Sthana, Rasayana Chikitsa*, 2nd *Pada* i.e *Prana Kaamiya* said to be *Buddhendriya Balaprada.*

It was prepared and administered for 60 days.

Treatment compliance and adverse events

Child tolerated the therapy well, and no adverse drug reactions (ADR) were observed throughout the *Panchakarma* and *Shamana Aoushadi* during the course of treatment.

RESULTS

Following 60 days of intervention significant improvement were notes and are summarized below.

Domain & Quadrants	On 0th day (BT)	On 90th day (AT)	Clinical change
Touch Processing	26 (More than others)	16 (Just like the majority of others)	Normalized
Movement Processing	30 (Much more than others)	17 (Just like the majority of others)	Normalized
Oral Sensory Processing	38 (Much more than others)	20 (Just like the majority of others)	Normalized
Conduct associated with sensory processing	33 (Much more than others)	28 (More than others)	Score reduced
Social emotional responses associated with sensory processing	37 (More than others)	31 (More than others)	Score reduced
Attentional response associated with sensory processing	26 (More than others)	22 (Just like the majority of others)	Normalized
Quadrants			
Seeking/Seeker	67 (Much more than others)	53 (More than others)	Score reduced
Sensitivity/Sensor	47 (More than others)	35 (Just like the majority of others)	Normalized
Avoiding/Avoider	52 (More than others)	43 (Just like the majority of the others)	Normalized

Following 60 days of intervention, the child Sensory Profile -2 assessment demonstrate a marked improvement across domains, with Touch, movement, oral sensory, and attentional processing and quadrants with sensitivity/sensor, avoiding/avoider shifting from "more/much more than others" at baseline to "just like the majority of others" post treatment. Conduct and social-emotional responses associated with sensory processing and seeking/seeker quadrant also showed a reduction in scores, indicating overall normalization and clinical improvement in sensory processing patterns.

DISCUSSION

In the present case, the child exhibited baseline complaints of poor social communication, poor attention span, Hyperactivity, poor eye contact and peer relationship along with aggressive behaviour, unaware of temperature changes, pain and oblivious to messy hands, looks for opportunities to fall and unaware of danger, preference for eating specific texture and gets lost easily. These symptoms significantly interfered with daily functioning and social participation. Pre-treatment assessment using the Child Sensory Profile -2 revealed abnormalities in multiple sensory processing domains and quadrants, including touch, movement, oral sensory processing, conduct, social-emotional responses, and attentional responses associated with sensory processing, seeking/seeker, sensitivity/sensor and avoiding/avoider. This indicated a global sensory integration dysfunction contributing to behavioural dysregulation and poor adaptive responses.

Here the clinical presentation of the patient indicates a *Vata-Pittaja* predominance, with vitiation primarily affecting *Indriyas* and *Manas*, leading to disturbances in Sensory processing, behavioural regulation, and cognitive integration. The adopted *Ayurvedic* interventions aimed at *Vāta–Pitta Shamana*, *Indriya Prasādana*, *Srotoshodhana*, and *Medhyajanana*. Selected based on the *Prabhava* and *Rasapanchakas* of the *Dravyas.*

Sarvanga Abhyanga with *Brahmī Taila- Brahmi taila* is a *Medhya* which improves the functions of *Buddhi*. So, here *Brahmi Taila* has facilitated in improving the *Indriya Buddhi*. *Sarvanga Dhara* with *Balamoola Kwatha* produced *Balya* and *Bṛuṃhaṇa* actions, supporting neuromuscular stability and modulating exaggerated sensory responsiveness. *Takra Shirodhara*, by acting on *Shiras* and *Manovaha Srotas*, thereby reducing hyperactivity, irritability, and sensory overload through rhythmic stimulation. *Anuvasana Basti* with *Panchagavya Ghiṛta* served as a prime *Shrotoshodhaka there by clearing the Indriyavaha Srotas or sensory pathways. Niruha Basti Kwatha Dravyas* like *Brahmi, Jatamaṃsi*, and

Sariva, have a properties of *Medhya, Kaphahara*, *Pittahara*, *Udwega Shamaka* and *Indriya – Mana Prasadana* properties pacify aggravated *Doṣhas*, reduce *Rajasa* dominance, and promote *Mana Prasadana*, so, it reduces the sensory seeking.

Amalaki Avaleha – Preparation is done as per *Amalaki Avaleha Paaka Vidhi* explained by *Acharya Charaka* in *Rasayana Chikitsa Adhyaya*. Fruits of *Amalaki* should be impregnated with *Palasha Ksharodhaka* (The water of *Palasha Kshara*) and kept air tight, later subjected to *putapaka*. Once the cooked cool down, the seeds are to be removed and the pulp should be made into a paste. To this1part of *Pippali choorna*, 1 ½ part of *Vidanga Choorna*, 2 parts of *Sharkara*, 2 parts of *Tila taila*, honey, and ghee should be added and mixed thoroughly. This preparation should be stored in a clean, ghee smeared container for 21 nights. This preparation is unique way is said to be *Buddhendriyabalaprada*. It can stabilize the sense organs, sensory pathways, and sensory interpretation in the brain cortex there by reducing the hypersensation and sensory seeking behaviours.

Overall approach was to do *Shodhana* of *Indriyavaha Srotas* by *Basti*, *Preenana* of *Indriyas* by *Abhyanga, Shirodhara, Parisheka* and to improve the *Indriya Patutva* (functionalities of *Indriyas)* by *Shamana Aoushadi* with *Amalaki Avaleha.*

CONCLUSION

The integrated Ayurvedic management demonstrated a multidimensional therapeutic approach, wherein the employed interventions collectively exerted *Shodhana, Preenana*, and *Indriya Patutva* effects. Procedures such as *Basti* facilitated *Shodhana* of *Indriyavaha Srotas*, ensuring proper clearance and functional integrity of sensory pathways. Therapies like *Abhyanga, Shirodhara,* and *Parisheka* contributed to *Preenana* by nourishing and stabilizing *the Indriyas* and *Manas*. Additionally, the administration of *Medhya Rasayana* such as *Amalaki Avaleha* enhanced *Indriya Patutva* (functional efficiency and acuity of sense organs). Together, these interventions helped in modulating sensory processing, reducing hypersensitivity and sensory-seeking behaviours, and promoting overall neuro-sensory balance.

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