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AYURVEDIC UNDERSTANDING OF SNAYU- MAJJAGATA VATA WITH REFERENCE TO SENSORY ATAXIA: A REVIEW ARTICLE

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ABSTRACT

Sensory ataxia is a neurological disorder of gait and balance resulting from loss of proprioceptive input, classically arising from degeneration of large myelinated sensory fibres, the dorsal root ganglion, or the posterior columns of the spinal cord. Classical Ayurvedic literature, through the concept of Snayu-Majjagata Vata, offers an independently derived framework that addresses the same clinical entity from the standpoint of Dosha-Dushya Samprapti. This review compiles and analyses the relevant Sutras from Charaka Samhita, Sushruta Samhita, Ashtanga Hridaya, Ashtanga Sangraha, and Madhava Nidana pertaining to the etymology of Vata, the neuroanatomical identity of Majja and Snayu, the two recognised mechanisms of Vata Prakopa, the specific clinical features of Majjagata and Snayugata Vata, and the differentiation of this entity from Avarana-type Vata Vyadhi and from Bhramaroga. The review establishes that Snayu-Majjagata Vata constitutes a Dhatukshayajanya, Svatantra Vata Vyadhi that corresponds comprehensively with the modern understanding of sensory ataxia.

KEYWORDS: Snayu, Majja, Vata, Sensory Ataxia, Dhatukshaya, Majjagata Vata, Snayugata Vata, Proprioception, Ayurveda Neurology.

1. INTRODUCTION

Ataxia, derived from the Greek term for "disorder," refers to a failure of coordinated movement despite preserved muscle power. Sensory ataxia, one of its principal subtypes, arises specifically from a deficit in proprioceptive feedback rather than from a primary motor, cerebellar, or extrapyramidal lesion, and is clinically identified through a positive Romberg's sign, impaired joint position and vibration sense, a stamping and wide-based gait, and, in advanced cases, pseudoathetosis.[1,2] While modern neurology localises this deficit to the peripheral sensory nerve, the dorsal root ganglion, and the posterior columns of the spinal cord.[1,2] classical Ayurvedic texts describe a remarkably parallel clinical and pathological entity under the framework of Snayu-Majjagata Vata. This review aims to systematically compile and interpret the relevant classical references that establish this correlation.

2. AIM AND OBJECTIVES

The aim of this review is to critically analyse classical Ayurvedic literature relevant to the concept of Snayu-Majjagata Vata and to correlate it with the modern clinical entity of sensory ataxia, with the following objectives:

(i) To establish the etymological and physiological basis of Vata's role in sensory transmission

(ii) To identify the neuroanatomical correlates of Majja and Snayu

(iii)To elucidate the Samprapti of Snayu-Majjagata Vata

(iv)To compile the classical Lakshanas (clinical features) attributable to this condition

(v) To differentiate this entity from other closely related Vata Vyadhis described in classical texts.

3. MATERIALS AND METHODS

This is a literary review based on classical Ayurvedic Samhitas — Charaka Samhita,[3] Sushruta Samhita,[5] Ashtanga Hridaya,[6] and Ashtanga Sangraha,[4] — along with their principal commentaries and Madhava Nidana.[7] Relevant Sutras pertaining to Vata Nirukti, Majja and Snayu Sharira, Vata Prakopa Hetu, Dhatukshaya Lakshana, and Vata Nanatmaja Vyadhi were identified, translated, and analysed for their correlation with the modern clinical description of sensory ataxia.

4. Modern Perspective of Sensory Ataxia

Sensory ataxia results from disruption of the dorsal column–medial lemniscus pathway, which carries proprioceptive and vibratory information from peripheral receptors through

large myelinated (A-beta) afferent fibres, via the dorsal root ganglion, into the posterior columns (fasciculus gracilis and fasciculus cuneatus) of the spinal cord, and onward through the medulla and thalamus to the sensory cortex. Common causes include chronic alcohol use with associated thiamine deficiency, subacute combined degeneration from vitamin B12 deficiency, chronic inflammatory demyelinating polyneuropathy, and hereditary conditions such as Friedreich's ataxia. Clinically, the hallmark is a positive Romberg's sign — marked worsening of imbalance when visual compensation is withdrawn — together with impaired joint position and vibration sense, a stamping gait, and, in more advanced disease, pseudoathetosis of the digits.[1,2]

5. Vata: Etymology and the Basis of Sensory Function

[illegible] ‘[illegible]’ [illegible], [illegible]

[illegible]

[illegible] *(Cha. Chi. 28/4).*[3]

The root 'Va', from which the term Vata is derived, carries two Dhatvarthas — Gati (movement) and Gandhana (perception, the imparting of sensory knowledge). This dual etymology establishes that Vata is not merely responsible for motor movement but is also the principal Dosha governing the transmission of sensory-perceptual information. Healthy Vata is further defined by three conditions: Avyahatagati (unobstructed movement along its own channel, i.e. one that has not abandoned its proper Marga), Sthanastha (remaining in its own site, having undergone no Vimargagamana), and Prakritau sthita (present in its natural, neither diminished nor increased, quantity). Any disease process affecting sensory transmission can therefore be understood as a disruption of one or more of these three conditions.

6. Neuroanatomical Identity of Majja

6.1 Mastishka and Mastulunga as Shirastha Majja

[illegible] च [illegible]

[illegible] च [illegible] च [illegible] *(A.San.Sha. 5/33)*[4]

Vagbhata identifies the tissue enclosed within the cranial bones (Kapala) as Mastishka and Mastulunga, explicitly describing it as the Majja of the Sthula Asthi (the skull). This is the foundational classical statement equating brain tissue with Majja Dhatu.

[illegible] *(Su. Chi. 2/69)*[5]

Sushruta describes Mastulunga in physical terms — as providing Bala-adhana (structural and functional support) to the Shiras, and possessing a consistency resembling Ghrita (clarified butter), soft and unctuous — an accurate gross description of cerebral tissue as observed on dissection.

[illegible] *(Chakrapani on Cha. Si. 9/80)*[3]

Chakrapani's terse commentarial gloss consolidates this understanding with maximum economy, confirming that Mastishka is simply the Majja located within the Shiras — establishing, across three independent classical authorities, a single continuous Majja Dhatu extending from the cranial cavity through the vertebral column, paralleling the modern anatomical continuity of the central nervous system.

6.2 Shiras as Moola — the Surya-Gabhasti Analogy

[illegible] च [illegible] *(Cha. Si. 9/47)*[3]

Charaka describes the Shiras as the Moola (root) from which the Indriyas (sense organs) and the Indriya-Prana-vaha Srotas (channels carrying sensory perception and vital function) draw their functional capacity, comparing this relationship to that of the sun (Surya) and its rays (Gabhasti). Just as a ray cannot function independently of its solar source, the peripheral sensory apparatus cannot deliver accurate perceptual information once its Moola-sambandha (root connection) to the Shiras, via an intact Majja-Snayu continuum, is disrupted.

7. Neuroanatomical Identity of Snayu as Peripheral Nerve

Reference	Content	Anatomical/functional inference
Su. Ni. 1/75[5]	Kandara of the toes and adjoining digits, when afflicted by Anila, produces Vatakantaka	Discrete, distally terminating Snayu structures in the digits and sole, matching distal length-dependent nerve involvement
Su. Ni. 1/75 (commentarial gloss)[5]	Kandara Mahasnayuh	A hierarchy of Snayu by thickness — parallels the distinction between large and fine sensory fibre populations
A.Hr. Ni. 15/14[6]	Snayu-Srotas Vibandhat produces Ayama and related	Snayu possesses its own conducting channel (Srotas), capable of

	disorders (e.g. Gridrasi)	Sanga/Vibandha, analogous to a nerve conduction pathway
Cha. Chi. 28/55[3]	Vitiated Vata grips Sira and Snayu together, producing Vitrasya (tearing/agitation)	A neurovascular-bundle concept, with Vitrasya paralleling axonal disruption
Chakrapani on Su. Sha. 5/35[5]	Snayu-Vyapatti harms the Shariri Purusha more severely than Asthi-Vyapatti	Functional and conducting primacy of Snayu over structural bone — consistent with nerve rather than ligament/tendon

8. Samprapti: The Two Mechanisms of Vata Prakopa

[illegible]

च।। *(Cha. Chi. 28/58)*[3]

Charaka classifies all instances of Vata Prakopa under two mechanisms: Dhatukshayat (through depletion of Dhatu) and Margavaranena (through obstruction of Vata's own channel by an excess Dosha or Dushya, typically Kapha or Meda). Among the Nidanas that produce Dhatukshaya, Madya (alcohol) is notable: its ten Gunas are described as directly opposing the ten Gunas of Ojas (Cha. Chi. 24/33–34),[3] furnishing a classical basis for chronic alcohol use as a Majja-depleting cause.

[illegible] ... *(Cha. Chi. 29/156)*[3]

[illegible] ... *(Cha. Chi. 26/29)*[3]

These two references specify Meda and Kapha as the principal obstructing agents in Avarana-type Vata Vyadhi, exemplified clinically by Avarana-Gridrasi and Pakshavadha-type disorders, wherein Vata's vitiation is Paratantra — secondary to, and dependent upon, the primary excess of another Dosha or Dushya.

[illegible] *(Cha. Chi. 28/225* [3]

The specific Lakshanas of Kapha Avrita Vyana — Guruta (heaviness) throughout the body, pain arising from all joints and bones, and Gati-sanga (mechanically restricted, sluggish movement) — provide a clear diagnostic contrast to the Dhatukshayajanya presentation, in which these obstructive features are characteristically absent.

[illegible] ... स च

[illegible]

[illegible] *(A.Hr. Su. 11/28)*[6]

Ashtanga Hridaya provides a generalised physiological law: wherever there is Vriddhi (bulk/increase), Kapha resides and Vata is thereby excluded; wherever there is Kshaya (depletion), Vata inevitably occupies the resulting space, some Acharyas holding this to be true even in a state of extreme Kaphakshaya. This establishes Dhatukshaya as an independently sufficient cause for Vata's pathological localisation, without requiring any obstructive Dosha.

9. Majjakshaya and its Proportional Relationship to Vata Vyadhi

[illegible] *(Cha. Su. 17/68)*[3]

Charaka states explicitly that the manifestation and severity of Vata-predominant disease is directly proportional to the degree of Majjakshaya present in the body — identifying Majja as the rate-limiting Dhatu governing the clinical expression and progression of this category of Vata Vyadhi.

[illegible] *(A.Hr. Su. 11/19)*[6]

Ashtanga Hridaya specifies the clinical triad resulting from Asthi-Majja Kshaya: Saushirya (porosity or hollowness of bone), Bhrama (dizziness, imbalance), and Timira-darshana (dimness or blurring of vision). This triad closely parallels the clinical picture of sensory ataxia, wherein structural compromise of the neural substrate (Saushirya) produces imbalance (Bhrama), and functional dependence on visual compensation becomes apparent (Timira-darshana) once that compensation is withdrawn.

10. Clinical Features: Snayugata Vata

[illegible] च/

[illegible]

(Cha. Chi. 28/35)[3]

Vata located in Snayu is described as producing Ayama (both internal and external stiffness or contraction), Khalli (an altered, hobbling or limping gait), Kubjatva (stooping posture), and disorders affecting either a single limb (Ekanga) or the entire body (Sarvanga) —

indicating that Snayugata Vata may present along a spectrum from localised to generalised involvement.

[illegible]

[illegible] च// *(Su. Ni. 1/27)*[5]

Sushruta locates Snayu anatomically as Asthi-parshvastha (situated alongside bone), and describes Vata reaching this Snayu as producing Stambha (stiffness) and Akshepana (jerking/convulsive movement), while noting that a distinct symptom complex — Shula and Shopha (pain and swelling) — emerges only if the pathological process progresses further to involve the Sandhi (joint). This sequential distinction is diagnostically valuable in separating a pure Snayu-level (neural) process from a Sandhigata (articular) one.

[illegible]

[illegible] ... *(Chakrapani on Su. Ni. 1/27)*[5]

Chakrapani's commentary offers precise functional definitions: Stambha is Nishchalikarana, the loss of the ability to actively initiate controlled movement (distinct from true rigidity), while Akshepana is Chalanam, a shaking or tremulous movement. Taken together, these represent Akunchana-Prasarana Abhava — the loss of the capacity for graded, controlled flexion and extension. This functional description corresponds closely to the pathophysiological definition of ataxia itself: preserved motor strength with lost coordination and control, and extends naturally to account for pseudoathetotic movements observed at the level of the digits.

11. Snayu Pradoshaja Vikara

[illegible]

[illegible] *(Cha. Su. 28/21)*[3]

Charaka provides a formal Nidana Panchaka classification of Snayu Pradoshaja Vikara, in which vitiated Snayu, together with Sira and Kandara, produces a defined symptom cluster: Stambha (stiffness), Sankocha (contraction), Khalli (altered gait), Granthi (nodular swelling), Sphurana (twitching), and Supti (numbness). Of these, Sphurana and Supti correspond

directly to sensory symptoms of a large-fibre neuropathic process, while the notable presence or absence of Granthi allows differentiation between a compressive/inflammatory Snayu lesion and a purely degenerative, Kshayajanya one.

12. Differentiating Bhrama: Sensory versus Vestibular/Cerebellar Ataxia

[illegible] *(Madhava Nidana 17)*[7]

Madhava Nidana provides a careful differential classification of altered-balance states. Murchha (syncope) is described as Pitta-predominant; Bhrama (giddiness) arises from a combination of Rajas, Pitta, and Vata; Tamo (blackout sensation) from Vata-Kapha; and Tandra and Nidra (drowsiness and excessive sleep) from Kapha predominance. True Bhramaroga is specifically defined as a Chakravat (wheel-like, rotational) sensation in which the patient invariably falls to the ground, and is constituted by a Rajah-Pitta-Anila combination. This description corresponds to central vestibular or cerebellar-type vertigo, and is textually and clinically distinct from the non-rotational, visually-dependent imbalance of Snayu-Majjagata Vata, which is a pure Vata phenomenon without Rajah-Pitta admixture. This independently derived Ayurvedic distinction parallels the modern clinical separation of sensory ataxia (Romberg-positive, without nystagmus, dysarthria, or dysdiadochokinesia) from cerebellar or vestibular ataxia.[1,2]

13. Correlation of Ayurvedic Concepts with Modern Understanding of Sensory Ataxia

Ayurvedic concept	Classical reference	Modern correlate
Vata Nirukti — Gati and Gandhana	Cha. Chi. 28/4[3]	Coordinated movement and proprioceptive/sensory transmission
Mastishka/Mastulunga as Shiras-stha Majja	A.San.Sha. 5/33[4]; Su. Chi. 2/69[5]; Chakrapani on Cha. Si. 9/80[3]	Cerebral parenchyma, continuous with spinal cord white/grey matter
Shiras as Moola, Indriyas as Gabhasti	Cha. Si. 9/47[3]	Cortical/thalamic integration dependent on intact afferent pathway
Snayu as Asthi-parshvastha, possessing its own Srotas	Su. Ni. 1/27[5]; A.Hr. Ni. 15/14[6]	Peripheral nerve coursing alongside bone, with its own conduction pathway
Dhatukshayajanya Vata Prakopa (vs Avarana)	Cha. Chi. 28/58[3]; Cha. Chi. 28/225 [3]; Cha. Chi. 29/156[3]	Degenerative axonopathy secondary to nutritional/toxic depletion, distinct from a compressive/obstructive neuropathy

Majjakshaya proportional to Vata Vyadhi	Cha. Su. 17/68[3]	Severity of large-fibre neuropathy proportional to degree/duration of causative insult
Saushirya, Bhrama, Timira-darshana	A.Hr. Su. 11/19[6]	Structural axonal loss producing imbalance, unmasked by withdrawal of visual compensation
Stambha, Akshepana, Akunchana-Prasarana Abhava	Su. Ni. 1/27[5]; Chakrapani on Su. Ni. 1/27[5]	Loss of graded motor control with preserved power — ataxia and pseudoathetosis
Sphurana, Supti (Snayu Pradoshaja Vikara)	Cha. Su. 28/21[3]	Paraesthesia and numbness from large-fibre sensory involvement
Bhramaroga excluded (Chakravat, Rajah-Pitta-Anila)	Madhava Nidana 17[7]	Cerebellar/vestibular ataxia, excluded by absence of nystagmus and true rotational vertigo

14. DISCUSSION

The classical Ayurvedic literature, though composed without access to modern neuroanatomical or histopathological methods, arrives at a conceptually complete framework for sensory ataxia through the combined understanding of Vata's Gandhana function, the continuous Majja substrate linking Shiras to peripheral tissue, and Snayu as a discrete, Srotas-bearing conducting structure anatomically positioned alongside bone. The explicit distinction drawn between Dhatukshayajanya and Avaranajanya Vata Prakopa allows this framework to differentiate a purely degenerative sensory neuropathy from an obstructive or compressive one, while the separate classification of Bhramaroga allows differentiation from central vestibular or cerebellar pathology. This suggests that the Samprapti of Snayu-Majjagata Vata, when correctly applied, offers a diagnostically precise and clinically useful correlate to the modern entity of sensory ataxia, with direct implications for Chikitsa: a Dhatukshayajanya presentation warranting Brimhana and Majja-Snayu-poshaka management rather than the Kapha-Meda-Nirharana approach appropriate to Avarana-type Vata Vyadhi.

15. CONCLUSION

Across Nidana, Samprapti, Dushya, Srotas, and Lakshana, classical Ayurvedic literature provides an independently derived but comprehensive framework — Snayu-Majjagata Vata — that corresponds closely to the modern clinical entity of sensory ataxia. The etymological basis of Vata as governing both Gati and Gandhana, the identification of Majja as a continuous neuroanatomical substrate from Shiras to periphery, the recognition of Snayu as a distinct conducting structure, and the clear textual distinction of Dhatukshayajanya Vata from both Avarana-type Vata Vyadhi and Bhramaroga, together establish Snayu-Majjagata Vata as

a Kashtasadhya, Dhatukshayajanya, Svatantra Vata Vyadhi warranting early and specific therapeutic attention within Ayurvedic clinical practice.

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