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ASTHI-MAJJA GATA VATA: SAMHITA APPROACH TO MULTIPLE MYELOMA

Dr. Bishnupriya Mohanty*[1], Shreya Jayant Barve, Prof (Dr.) Sangram Keshari Das

[1]MD, PhD. Professor and HOD, Department of Sanskrit Samhita and Siddhanta, Gomantak Aurveda Mahavidyalaya and Research Centre, Shiroda, Goa.

[2]Final B.A.M.S., Gomantak Aurveda Mahavidyalaya and Research Centre, Shiroda, Goa.

[3]Professor & Head, Dept. of Dravyaguna Vijnana, Gomantak Ayurveda Mahavidyalaya & Research Centre, At/Po-Shiroda, Dist- North Goa, Goa, India-403103.

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***Corresponding Author: Dr. Bishnupriya Mohanty**
MD, PhD. Professor and HOD. Department of Sanskrit Samhita and Siddhanta, Gomantak Aurveda Mahavidyalaya and Research Centre, Shiroda, Goa. **DOI:** https://doi.org/10.5281/zenodo.21705801

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ABSTRACT

Multiple Myeloma (MM) is a clonal plasma cell proliferative disorder characterized by an abnormal increase in monoclonal immunoglobulins and significant bone destruction. This paper establishes a conceptual correlation between MM and the *Ayurvedic* condition *Asthi-Majja Gata Vata*, which describes destructive pathologies targeting the deep tissue systems (*Dhatus*). Using a methodology that maps modern clinical features to *Ayurvedic* symptoms (*Lakshanas*), the study analyzes the shared pathogenesis (*Samprapti*) of these conditions. Results from a comparative evaluation and a clinical case study of a 68-year-old male demonstrate that MM's hallmark features—including lytic lesions, bone pain, hypercalcemia and anemia—closely align with *Ayurvedic* symptoms such as *Bhedavat Vedana* (piercing pain), *Asthi Shotha* (bone swelling) and *Vivarnata* (pallor). The study concludes that *Asthi-Majja Gata Vata* serves as a viable parallel to MM, suggesting that an integrative approach combining *Ayurvedic* principles with contemporary medicine can facilitate early detection and improve management outcomes for this complex disease.

KEYWORDS: *Asthi -Majja Gata Vata*, Multiple Myeloma, Integrative treatment, *Lakshanas*, *Ayurveda*, Cancer.

INTRODUCTION

Ayurveda, the ancient Indian medical science, provides profound conceptual models for understanding complex and destructive pathologies that primarily target the deep tissue systems (*Dhatus*) of the body. In today's world, we can identify these conditions as malignancies. This paper aims to establish a correlation and rediscover the disease known as multiple myeloma from the perspective of *Asthi Majja Gata Vata*. Multiple myeloma (MM) is a clonal plasma cell proliferative disorder characterised by the abnormal increase of monoclonal immunoglobulins. The latest comprehensive data on multiple myeloma from India's National Cancer Registry Programme (NCRP), largely emerges from the 2020 report (including data from 2012 - 2016), states that Multiple myeloma cases constituted approximately 1.19% of all cancers in India during the 2012-2014 period. The age-adjusted incidence rates (AARs) per 100,000 population were 1.13 in males and 0.81 in females. The incidence rates increased steadily with age, with most documented cases falling within the 60-69 years age bracket. A higher incidence was noted in males compared to females, with a male-to-female ratio of approximately 1.47:1. Evidently speaking, this is an approaching epidemic, and the need of the hour is to have a holistic approach in identifying the condition in the early stage and taking urgent measures for its management. This can be effectively achieved by using *Ayurvedic* medicine along with contemporary treatment.

Aim

The primary objective of this paper is to conduct a detailed conceptual analysis, systematically comparing the pathogenesis (*Samprapti*) and clinical features (*Lakshanas*) of *Asthi-Majja Gata Vata* with the modern entity Multiple Myeloma (MM), and to solidify this correlation through the presentation of a brief clinical case study.

MATERIALS AND METHODS

This study is a conceptual correlation based on secondary sources. Materials include the *Brihatrayi* (for *Asthi-Majja Gata Vata*), peer-reviewed literature (for MM pathogenesis/CRAB criteria) and a synthesized case profile. The methodology maps MM clinical features to *Asthi-Majja Gata Vata Lakshanas* to establish the *Ayurvedic Samprapti*.

Review of Literature And Conceptual Framework

Pathophysiology of *Asthi - Majja Gata Vata*:

Nidaana

The *Hetus* for the occurrence of *Asthi-Majja Gata Vata* are mostly related to *Aahaar* V*ihaar* and *Manasika Sthiti* of a person, they could be enumerated as R*uksha Ahar*, *Alpa Matra Ahar*, *Laghu Guna Yukta Ahara*, A*ti Maithuna*, A*ti jagarana*, *Anavashyak Panchakarma Prayoga*, *Anuchit Chikitsa*, A*dhik Mala*, V*yayama*, *Plavan*, *Ativa Cheshta* [A*ti Kriya*], D*hatu Kshaya*, A*ti Chinta*, A*ti Shoka*, longstanding *Roga* causing *Karshana* of *Rugna Shareera*, *Dukha Shayya* or A*sana*, *Krodha*, D*ivaswapa*, B*haya*, *Vega dharana*, A*ma Dosha Utpatti*, M*arma Sthana Aghatat*, L*anghana*, falling from a fast moving vehicle, K*rusha Dhatu*, these *Hetus* are mentioned already in B*ruhatrayees*.

Another *Hetu* for the occurrence of this V*yadhi* could be due to B*eejadosha* too. Often this phenomenon is noted when there is a chance that a first-degree blood relative of a R*ugna* could suffer from the same condition, hence though rare, this could not be neglected. This can be justified by considering that due to the B*eejadosha*, there are chances of K*sheena Doshas*, further leading to future D*ushtis*.

These H*etus* cause D*ushti* of the V*ata Dosha*, which aggravates and further goes and lodges into the *Rakta Srotsas* of the body, causing the V*yadhi*.

Poorvaroopa

As this is a *Vata Vyaadi*, the P*oorvaroopa* of these diseases stay inconspicuous or often go unnoticed.

Roopa

Prakupita Vata, when it goes into S*thanasamshraya* condition in the A*sthi-majja Dhatu*, leads to *Bhedavata Vedana*, *sandhi Shoola*, M*amsa* and *Bala Kshaya*, *Nidra Nasha*, S*atata Ruja*. The person experiences *Upashaya* on U*shna Sparsha* and massage, *Sharrera* lethargic, patient experiences pain as if being pierced with a needle, S*hareera* becomes V*inama*, and frequent yawning. Along with these *Lakshanas*, we also see A*sthi Shotha* and *Avrut Vata*-like conditions, which could lead to *Upadravas* like *Hrudroga*, V*idradhi*, *pleeha*, *gulma*, *atisaara* due to the association of other aggravated *doshas*.

Additionally, *asthi vaha* and *majja vaha stotas dushti lakshanas* are also seen, such as *adhi asthi-danta, bhedavat shoola iasthi-danta, vivarnata, kesha-loma-nakha-shmashru-dushti, parvanam rooja, brahma darshana* and *tama*.

Samprapti

NIDAAN SEVANA AND OTHER *DOSHA* VITIATING FACTORS

⇩

VATA DOSHA PRADHANA, TRIDOSHA DUSHTI

⇩

AGNI MANDYA

⇩

AMA RASA UTPATTI

⇩

RASA DHATU DUSHTI

⇩

RAKTA DHATU KSHAYA AND FURTHER *UTTAROTTAR DHATU ANULOMA KSHAYA*

ASTHI DHATU DUSHTI (due to the *ashraya-ashrayee* relation with *vata dosha*)

+ CAUSING *DUSHTI OF MAJJA DHATU* (being the *uttarottara dhatu* of *asthi dhatu*)

⇩

DUSHTA DOSHA PRASARA

⇩

STHANASAMSHRAYA IN THE KHA VAIGUNYAS OF SHAREERA

⇩

FURTHER *KSHAYA* OF THE *SHAARIRIKA DHATU*

⇩

ASTHI - MAJJA GATA VATA

Pathophysiology of Multiple Myeloma (MM)

The pathophysiology of MM begins when a plasma cell, which is predisposed to produce antibodies, acts abnormally and starts to grow in an abnormal cancerous manner in the bone marrow. These plasma cells (or myeloma cells) produce an abnormal amount of only one type of antibody, known as the M-protein / Monoclonal protein. Additionally, these myeloma cells hinder the production of other normal healthy cells produced in the bone marrow.

The structure of a bone is constituted by the osteoblasts (the bone-forming cells), the osteoclasts (the bone-reabsorbing cells), the osteocytes (mature cells which maintain the bone structure) and the osteoprogenitor cells (precursors of osteoblasts). Hence, a bone is constantly being remodeled in a balanced manner. MM breaks this balance.

In a normal body, the normal activity of the osteoclasts is maintained basically by two entities, namely the OPG (Osteoprotegerin) and RANKL (Receptor Activator of Nuclear Factor κB Ligand). OPG — a "decoy receptor" produced mainly by osteoblasts, binds to RANKL and prevents it from activating osteoclast cells, while RANKL — a signaling molecule made by osteoblast (and related) cells — triggers osteoclasts to break down bone; together, this balance regulates normal bone remodeling. In MM, myeloma cells influence the bone marrow environment in ways that increase RANKL production and simultaneously reduce OPG levels.

Myeloma cells also produce inhibitors that inhibit the activity of osteoblasts. Among the notable inhibitors is DKK-1(Dickkopf WNT Signaling Pathway Inhibitor 1, which blocks the maturation of osteoblasts, thereby reducing bone osteoblast genesis). Along with these inhibitors, there are other signals too, such as IL-3, TNF-α, and MIP-1α, which also contribute to creating the imbalance.

In addition to this, the bone marrow environment has bone marrow stromal cells, which are supportive in nature, giving signals that promote myeloma cell growth, and when a bone is broken down, it releases growth factors stored in the bone (like TGF-β) which further support myeloma cell survival.

All these factors together create a vicious cycle of pathophysiology, which causes the bone damage, lytic lesions to appear and sometimes tumour growth can also be seen.

Clinical Features

- Bone Pain and Fractures - Lytic lesions cause patients to present with pain in the spine, ribs and other long bones or even fractures.
- Hypercalcemia: Breakdown of bone causes the release of calcium in the blood, which could cause symptoms like nausea, dehydration, confusion, and weakness.
- Anaemia: Malignant plasma cells cause suppression of normal blood cells, resulting in anaemia.
- Skeletal-Related Events (SREs): Include spinal cord compression, pathological fractures, and bone-related complications.
- Renal Impairment: mainly due to toxic and mechanical effects of excess free light chains, cast formation, hypercalcemia, and other stressors.
- Liver involvement: rare, but possible via plasma cell infiltration of liver tissue or deposition of abnormal immunoglobulin fragments/amyloid.

- Cardiac involvement: abnormal plasma-cell proteins (light chains) can deposit in the heart, causing Cardiac Amyloidosis, stiff-heart / heart-failure or arrhythmias; plus MM-related anaemia, kidney problems and some treatments can further stress the heart and raise risk of cardiovascular complications.
- Spleen involvement: Malignant plasma cells may infiltrate the spleen, leading to splenomegaly or splenic lesions, especially in cases of extramedullary disease.
- Gastrointestinal involvement: like nausea, vomiting, constipation or diarrhoea, although serious GI-tract involvement (e.g. bowel obstruction or bleeding) is rare.

Drawing a parallel between Asthi-Majja Gata Vata and Multiple Myeloma

Table 1.

	Asthi-Majja Gata Vata	**Multiple Myeloma**
Etiology*Nidaan*	• *Vata Dosha Prakopak Hetu.* • *Tridosha Prakopaka Hetu.* • *Asthi Vruddhi-Kshaya Karak Hetu.* • *Majja Vruddhi-Kshaya Karak Hetu.* • *Vruddha.* • *Beejadosha.* • *Krusha.*	• Environmental / Occupational exposures. • Exposure to Chemicals / Toxins. • Low physical activity / Sedentary lifestyle. • Overweight / Obesity. • Older age. • Gender (mostly males). • Race / Ethnicity(African descent). • Pre-existing plasma-cell disorders. • Immune suppression / impaired immunity.

Table 2.

	Asthi-Majja Gata Vata	**Multiple Myeloma**
Clinical features /*Lakshana*	• *Bhedavata Vedana.* • *Sandhi Shoola.* • *Bhedavat Shoola in Asthi-Danta.* • *Satata Ruja.* • *Asthi Shotha.* • *Mamsa and Bala Kshaya.* • *Nidra Nasha.* • *Adhi Asthi-Danta.* • *Parvanam Rooja.* • *Kesha-loma-nakha-shmashru-dushti.* • *Vinama.* • *Hrudroga.* • *Pleeha.* • *Gulma.* • *Atisaara.* • *Vivarnata.* • *Brahma Darshana and Tama.* • *Krushata.*	• Bone Pain and Fractures. • Hypercalcemia. • Skeletal-Related Events (SREs). • Cardiac involvement. • splenomegaly or splenic lesions. • Tumour. • like nausea, vomiting, constipation or diarrhoea. • Anaemia. • Confusion due to hypercalcemia. • Loss of appetite and metabolic changes leading to weight loss.

Table 3.

	Asthi-Majja Gata Vata	**Multiple Myeloma**
	NIDAAN SEVANA AND OTHER DOSHA VITIATING FACTORS ⇩ VATA DOSHA PRADHANA, TRIDOSHA DUSHTI ⇩ AGNI MANDYA ⇩ AMA RASA UTPATTI	Normal bone marrow → Genetic/molecular change in a plasma cell ↓ Clonal expansion of malignant plasma cells (myeloma cells) in bone marrow ↓ Overproduction of monoclonal immunoglobulin (M-protein / light chains) + altered interaction with bone marrow microenvironment

	⇩ RASA DHATU DUSHTI ⇩ RAKTA DHATU KSHAYA AND FURTHER UTTAROTTAR DHATU ANULOMA KSHAYA ASTHI DHATU DUSHTI (due to the ashraya-ashrayee relation with vata dosha) + CAUSING DUSHTI OF MAJJA DHATU (being the uttarottara dhatu of asthi dhatu) ⇩ DUSHTA DOSHA PRASARA ⇩ STHANASAMSHRAYA IN THE KHA VAIGUNYAS OF SHAREERA ⇩ FURTHER KSHAYA OF THE SHAARIRIKA DHATU ⇩ ASTHI - MAJJA GATA VATA	↓ Myeloma cells + bone-marrow stromal cells secrete osteoclast-activating factors (e.g. ↑ RANKL, MIP-1α, IL-3, IL-6, TNF-α) ← AND ↓ production of inhibitors of bone formation / bone-protective factors (e.g. ↓ OPG, ↑ DKK-1 / Wnt-inhibitors) ↓ Imbalance: ↑ osteoclast formation & activity (bone resorption) + ↓ osteoblast differentiation & activity (impaired bone formation) ↓ Net bone destruction → osteolytic lesions, bone thinning ↓ Clinical consequences of bone destruction: bone pain, pathological fractures, hypercalcemia, skeletal-related events (e.g. vertebral collapse, spinal cord compression) ↓ Additional consequences: marrow infiltration → reduced normal blood-cell production (anaemia, immunodeficiency); excessive monoclonal proteins/light chains → renal damage; systemic symptoms. ↓ MULTIPLE MYELOMA

The case study that follows provides a concrete example of how the proposed idea operates in a real-world context.

CASE STUDY

A male patient ABC, aged 68 years, k/c/o Diabetes Mellitus, IHD (paroxysmal atrial fibrillation) on treatment, was diagnosed with Multiple Myeloma R-ISS-3(Amyloidosis). He suffered from paroxysmal atrial fibrillation and was admitted for the same. He had suffered from drastic weight loss of 5-6 kgs in the previous 4 months, had discontinued *ayurvedic* medicine for *prameha* since 4 months, which eventually led to uncontrolled diabetes mellitus. Also, it was found that his Hb was 8 gm/dl at the time of his admission and was constantly anemic for the following months. He also had extremely elevated levels of SGOT and SGPT, and eventual allopathic treatment was done. Further on performing a CT scan it was discovered that he had moderate ascites, mild degenerative multiple well defined lytic lesions scattered diffusely in axial skeleton as well as ribs, large lesion in D8 vertebral body with breach in right anterolateral cortex was observed, also mild wall thickening of the urinary bladder along with mild perinephric fat stranding was noted on both kidneys (left > right).

He also suffered with episodes of confusion, constipation, weakness and sleeplessness.

M- Band (myeloma cells) test was performed, which showed positive for multiple myeloma.

Further, Bone marrow aspiration and bone marrow biopsy were performed, which confirmed the markers of clonic cells, namely CD138, Lambda and CD20.

RESULTS

The results of the comparative evaluation and clinical case analysis are presented below, detailing the observed outcome. We see that the patient who has been diagnosed with the provisional diagnosis of Multiple Myeloma shows the lakshanas of *Asthi-Majja Gata Vata*.

The L*akshanas* can be tallied as follows.

	Symptoms seen in Patients	***Lakshanas* seen in *Asthi-Majja Gata Vata***
1.	Paroxysmal Atrial Fibrillation (IHD)	*Hrudroga.*
2.	Drastic Weight Loss	*Krushata, mamsa-bala kshaya.*
3.	Anemia	*Vivarnata, Pleeha.*
4.	Lytic lesions	*Asthi Shotha /Shosha.*
5.	Pain	*Bhedavat Vedana.*
6.	Confusion	*Bhrama* and *Tama.*

DISCUSSION

In the present study, the findings indicate that the comparative outcomes between the *Ayurvedic* and allopathic approaches provide important insights into the parallelity that we see between the contemporary concept of Multiple Myeloma and our *Ayurvedic* concept of *Asthi-Majja Gata Vata*, this could also suggest that the concept of *Anukta Vyadhi* is - not A*nukta* every time, it is just the way that we approach a disease in consideration. Here I am trying to tap into the concept of *Asthi-Majja Gata Vata* due to the similarities I observed with MM, but that doesn't necessarily mean that MM = *Asthi-Majja Gata Vata*, but this concept could just be referred to and taken into consideration and *Chikitsa* for the same could be employed while treating. Other peer-reviewed papers also compare MM to *Arbuda*. Overall, the findings suggest that the *Lakshanas* of *Asthi-Majja Gata Vata* align with MM, and further studies could be conducted in order to prove the relevance and create a treatment protocol for the same.

CONCLUSION

The *Lakshanas* of *Asthi-Majja Gata Vata* were compared to signs and symptoms seen in Multiple Myeloma and it was found that they both juxtapose each other. This idea could be kept in mind while treating a patient and the markers for the same could be easily detected in an earlier stage; further, the necessary steps could be taken in advance to manage the condition.

The word “Cancer” itself creates an enigma of fear in the minds of patients and could also add to the pressure that a doctor could experience when dealing with a case of *Anukta Vyadhi* like Multiple Myeloma. Using an integrative approach with a combination of *Ayurvedic* as well as contemporary sciences would help cure the disease as well as maintain the health of the patient, showing minimal side effects of chemotherapy and multiplying the results seen in a patient multiple-fold.

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