

A CONCEPTUAL STUDY OF MADHUMEHA IN RELATION TO DIABETIC NEUROPATHY: AN INTEGRATIVE REVIEW OF AYURVEDIC AND MODERN PERSPECTIVES

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Article Received on 05 April 2026,

Article Revised on 25 April 2026,

Article Published on 01 May 2026,

<https://doi.org/10.5281/zenodo.20033411>

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How to cite this Article: *¹Dr. Shahinur Islam, ²Prof. Dr. Pranabjyoti Baishya, ³Dr. Manir Uddin Dewan, ⁴Dr. Naba Kr. Hazarika (2026). A Conceptual Study Of Madhumeha In Relation To Diabetic Neuropathy: An Integrative Review Of Ayurvedic And Modern Perspectives. World Journal of Pharmaceutical Research, 15(9), 1565-1589.

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ABSTRACT

Madhumeha, a subtype of Prameha described in classical Ayurvedic literature, is a chronic metabolic disorder characterized by excessive urination with sweet urine and progressive tissue depletion. It is primarily considered a Vataja Prameha, with Kapha predominance in the early stages, eventually leading to Dhatu kshaya and Ojakshaya. The vitiation of Tridosha especially Vata and Kapha along with disturbances in Meda, Mamsa, and Kleda, results in systemic metabolic dysfunction. In advanced stages, Madhumeha presents with various complications (Upadravas), including neurological manifestations such as Suptata (numbness), Daha (burning sensation), and Sparsha-hani (loss of sensation), which resemble peripheral neuropathy. Etiological factors include Santarpanjanya Nidana, such as excessive intake of sweet foods, sedentary lifestyle, physical inactivity, and psychological stress, highlighting its multifactorial nature. In

modern medicine, Madhumeha is closely correlated with Diabetes Mellitus, a chronic metabolic disorder characterized by persistent hyperglycemia due to insulin deficiency or resistance. One of its most common complications is diabetic neuropathy, affecting nearly 50% of patients. Its pathogenesis involves oxidative stress, polyol pathway activation, advanced glycation end-product accumulation, microvascular damage, and nerve ischemia, leading to progressive nerve dysfunction. This integrative review analyzes classical Ayurvedic and modern biomedical literature to establish a correlation between Madhumeha and diabetic neuropathy. It reveals parallels between Ayurvedic concepts such as Dhatukshaya and Vata vitiation and modern mechanisms of neuronal damage. Ayurveda advocates a holistic management approach including Nidana Parivarjana, Shodhana, Shamana, and Rasayana. An integrative approach may enhance prevention and management, emphasizing the need for evidence-based interdisciplinary research.

KEYWORDS: Madhumeha; Diabetes Mellitus; Diabetic Neuropathy; Prameha; Vata Vyadhi; Peripheral Neuropathy.

INTRODUCTION

Diabetes Mellitus is a heterogeneous group of metabolic disorders primarily marked by persistent hyperglycemia, along with abnormalities in carbohydrate, fat, and protein metabolism.^[1] India bears a significant burden of this disease, with an estimated prevalence of around 7% among adults. This high incidence is largely attributed to genetic predisposition combined with evolving lifestyle patterns, including reduced physical activity and increased intake of calorie-dense diets, particularly among the expanding middle-class population.^[2] The complications associated with diabetes are broadly classified into vascular and non-vascular types. Vascular complications are further categorized into microvascular complications—such as neuropathy, retinopathy, and nephropathy and macrovascular complications, including coronary heart disease, peripheral arterial disease, and cerebrovascular disorders.^[3]

Diabetic neuropathy is one of the most frequent complications of diabetes, with a lifetime prevalence of nearly 50%. It can present in multiple clinical forms, including radiculoplexopathy and autonomic neuropathy; however, the most common presentation is distal symmetrical polyneuropathy, which arises due to damage to large nerve fibers.^[4]

In Ayurveda, Diabetes Mellitus has been extensively described under the broader category of Prameha. Classical Ayurvedic texts provide a detailed account of this condition.

Comparative analysis of both systems reveals considerable similarities in terms of etiology, pathogenesis, clinical manifestations, and certain therapeutic approaches, leading to the correlation of Prameha with Diabetes Mellitus. Clinical features described in Prameha, such as Karapada Daha (burning sensation in hands and feet), Cumcumayana (tingling sensation), and Suptata (numbness), may appear during the prodromal, manifest, or complication stages of the disease. These features closely resemble the clinical presentation of diabetic peripheral neuropathy.^[5]

AIMS AND OBJECTIVES

- To study the previous research works and to find out the untapped areas of research on MADHUMEHA in relation to DIABETIC NEUROPATHY
- To provide future guidelines for research work regarding MADHUMEHA in relation to DIABETIC NEUROPATHY

MATERIAL AND METHOD

Study Design

This study is designed as a systematized narrative integrative review, intended to critically evaluate and establish a correlation between the Ayurvedic concept of Madhumeha with Diabetic Neuropathy as described in contemporary medical literature.

Data Sources

Ayurvedic Literature

Classical Ayurvedic texts were extensively reviewed, including the Caraka Samhita, Sushruta Samhita, and Ashtanga Hridaya, along with their respective commentaries, to gather traditional perspectives.

Modern Scientific Literature

Contemporary medical information was collected from standard textbooks such as Davidson's Principles and Practice of Medicine, Harrison's Principles of Internal Medicine, and Harsh mohan text book of pathology along with relevant peer-reviewed journal articles.

RESULTS AND DISCUSSION

Disease Review of Madhumeha or Prameha

Prameha is one of the 'Ashtau Mahagadas' and originates due to deranged metabolism. Description of Prameha from various Ayurvedic classics helps to understand disease thoroughly.

Nirukti and Paribhasa

The Word *Prameha* has appeared by merging of 'Pra' and 'Meha'. *Pra* is known as *upasarga* or prefix which is attached with main *dhatu* i.e. verb *Meha*. The word *Meha* is derived from root 'mih'-*sechane* by adding 'lut' *pratyaya* to it- "*Mehati sinchati mutraretansi*" i.e. is to excrete [*Halayudhakosha*]. According to *Sanskrita* Literature the word 'mih' stands for watering, wetting and *upasarga* 'pra' suggest excessive frequency. Rigveda mentioned this word first is *Mehanadthanam Karanallium*.^[6]

DEFINITION OF MADHUMEHA

The clinical entity in which patient voids the urine having concordance with Madhu i.e. of Kashaya and Madhura taste, Ruksha (dry) texture and honey like colour and body acquires sweetness called Madhumeha Acharya Sushruta has narrated the term Kshaudra Meha in place of Madhumeha. Kshaudra is nothing but variety of Madhu (honey), which is Kapila (tawny) in colour. So it is clear that Kshaudrameha resembles with Madhumeha. Further, he asserted that when all the Pramehas ill-treated or neglected is converted into Madhumeha.

CLASSIFICATION

Many classifications are available from our texts of which most important is according to its dosha predominance.

Doshik [Clinicopathological classification]^[7,8,9]

Twenty types of prameha have been described by the different authors of Ayurvedic Classics. Among these, 10 are of kaphaja type, 6 are of pittaja type and 4 belong to vataja type.

Kaphaja Meha

| | Charaka | Sushruta | Vagbhatta | Madhava |
|--------------------|---------|-----------|------------|------------|
| Udakameha | + | + | + | + |
| Ikshubalikarasmeha | + | + | Ikshumeha | Ikshumeha |
| Sandrimeha | + | + | + | + |
| Sandrprasadmeha | + | Surameha | Surameha | Surameha |
| Shuklameha | + | Pishtameh | Pishtameha | Pishtameha |

| | | | | |
|---------------------|---|--------------|-------------|-----------|
| Shitameha | + | Lavanameha | + | + |
| Siktameha | + | + | + | + |
| Shanairmeha | + | + | + | + |
| Alalmeha | + | Phenameha | Lalameha | Lalameha |
| Shukrameha | + | + | + | + |
| Pittaja Meha | | | | |
| Ksharameha | + | + | + | + |
| Kalameha | + | Amlameha | + | + |
| Nil meha | + | + | + | + |
| Lohitmeha Raktameha | | + | Shonitameha | Raktameha |
| Manjishthameha | + | + | + | + |
| Haridrameha | + | + | + | + |
| Vataja Meha | | | | |
| Vasasmeha | + | + | + | + |
| Majjameha | + | Sarpimeha | + | + |
| Hastimeha | + | + | + | + |
| Madhumeha | + | Kshaudrameha | + | + |

Prognostic Classification

| | | |
|-----------------------------|------------------------|--------------------|
| Sadhya | Yapya | Asadhya |
| Kaphaja | Pittaja | Vataja |
| Sthula(Obese) | Usually not much obese | Krishha(Asthene) |
| Apathyanimittaja (Acquired) | Acquired | Sahaja(hereditary) |
| Early Stage | Acute Stage | Advanced Stage |
| Without complication | With Complication | With Complication |

Classification based on physical constitution

Sthula (obese) and Krisha (lean)

Classification based on etiological factors

Sahaja (hereditary) and Apathyanimittaja (acquired)

Classification based on Samprapti (pathogenesis)

Avaranjanya and Dhatukshayajanya.

Classification based on causative factors

Santarpanajanya and Apatarpanajanya.

In brief, Madhumeha is broadly classified into **Sahaja and Apathyanimittaja** types. The Krisha, Dhatukshayajanya, and Apatarpanajanya forms can be correlated with **Sahaja** Madhumeha, whereas Sthula, Avaranjanya, and Santarpanajanya types correspond to **Apathyanimittaja Madhumeha**

NIDANA: Etiological factors can be classified into **Sahaja & Apathyanimittaja**.

Sahaja: Due to certain defects in Stri & Pumbeeja (Ovum & Sperm) which is said to be matrupitru beejadoshakrita will result in sahaja prameha. Regarding beeja dosha it may have its origin from parents of both father & mother i.e.it may be inherited from generation to generation & thus it is an unique example of hereditary disease. Acharya Charaka has mentioned that excessive indulgence of madhura rasa by parents is the chief cause changes & damages in the sperm & ovum. Over indulgence in madhura rasa by mother during pregnancy is likely to induce prameha.

Thus the sahaja dosha and apathya both plays a combined role in the causation of Sahaja type of prameha. As regards the Apathyaja type, it may be differentiated that it has no sahaja background & the apathya alone causes the disease.

Apathyanimittaja

Etiological Factors of General Prameha

- Asyasukham
- Swapnasukham
- Excessive indulgence in dadhini i.e. various preparation of curd.
- Gramya, Audaka, Anupa mamsa i.e. meat of domestic, aquatic, wet land animals.
- Payamsi i.e. excessive use of milk & its preparation
- Navannapanam i.e. new grains & drinks
- Guda vaikrutam i.e. various preparation of sugar & jaggery.
- Other substances which increases kapha may cause prameha.

Sushruta adds snigdha (unctuous), medya (fatty) & drava (liquid) type of food also among causative factors.^[10] According to Vagbhatta, the diet & activities which increase meda, mutra & kapha are supposed to cause prameha.^[11]

(a) Kaphaja Prameha Nidana [Cha.Ni.4/5]

- Frequent & Excessive intake of fresh corns like Hayanak, Yavaka, Chinaka, Uddalaka, Naishdha, Itkata, Mukundaka, Mahavrihi, Pramodaka & Sugandhaka
- Intake of pulses like fresh harenu & Masha with ghee.
- Intake of the meat of domestic, marshy & aquatic animals.
- Intake of vegetables, tila, palala, pishtanna, payasa (a type of milk preparation), krishara, Vilepi & preparations of sugarcane.

- Intake of milk, fresh wine, immature curd & curd which are mostly liquid, Sheeta & immature in nature.
- Avoidance of uncton & physical exercise.
- Indulgence in sleep, bed rest & sedentary habits
- Restoring to even such regimens which produce more of kapha, fat & urine.

(b) Pittaja Prameha Nidana^[12]

- Intake of Ushna, Amla Lavana, Kshara & Katura Dravyas.
- Intake of food before the digestion of the previous meal.
- Exposure to excessively hot sun, heat of the fire, physical exertion & anger
- Intake of mutually contradictory food articles.

(c) Vataja Prameha Nidana^[13]

- Excessive intake of Dravyas having predominantly kashaya, katu, tikta rasa, Ruksha, Laghu & Sheeta veerya
- Excessive indulgence in sex & physical exercise.
- Excessive administration of emesis, purgations, asthapana & shirovirechana.
- Resorting to suppression of the manifested urges, fasting, assault, exposure to sun, anxiety, grief, Excessive blood letting, Keeping awake at night & irregular posture of the body.

Specific Etiology of Madhumeha

The person indulging in food substances having guru, snigdha qualities & excessive indulgence of Amla & lavana rasa substances & navanna pana, excessive sleep, sitting in a same place for longer duration, avoiding exercises & thinking process & also not performing the shodhana process in a proper time.

Acharya Sushruta has narrated that untreated prameha in its initial stage, gets converted into Madhumeha & becomes incurable.^[14]

According to Acharya vagbhatta, the urine of madhumehi will be simulating with that of madhu. Two type of vata vitiation has been mentioned, one is due to dhatukshaya & second due to margavaradha.^[15]

POORVARUPA^[7,8,9]

As a matter of fact, premonitory symptoms are produced at the stage of sthana samshraya and it is one kind of warning to the person to stop the ingestion of causes of prameha.

| | Cha | Su. | A.H. | A.S. | Ma.Ni. |
|-------------------------|-----|-----|------|------|--------|
| Kesheshu Jatilibhava | + | + | - | + | - |
| Asya Madhurya | + | - | + | + | + |
| Karapadadaha | + | + | + | + | + |
| Karapada Suptata | + | - | - | - | - |
| Mukha Talu KanthaShosha | + | - | + | + | - |
| Pipasa | + | + | - | + | + |
| Alasya | + | - | - | + | - |
| Kaye malam | + | - | - | + | - |
| Kaya Chhidreshu Upadeha | + | - | - | + | - |
| Paridaha Angeshu | + | - | - | - | - |
| Suptata Angeshu | + | - | - | + | - |
| Shatpada Pipilika | | | | | |
| Mutrabhisaranam | + | - | + | + | - |
| Mutre cha Mutradosham | + | - | - | - | - |
| Visra sharir gandha | + | + | + | + | - |
| Sarvakala Nidra | + | - | - | + | - |
| Sarvakala Tandra | + | + | - | + | - |
| Snigdha gatrata | - | + | - | + | - |
| Pichhila & guru gatrata | - | + | - | - | - |
| Madhur mutrata | - | + | - | - | - |
| Shukla Mutrata | - | + | - | + | - |
| Sada | - | + | - | + | - |
| Shwasa | - | + | - | + | - |
| Keshanakhativridhi | + | + | + | - | - |
| Sheeta Priyata | + | - | + | + | - |
| Hridaya NetraJihwa | | | | | |
| Shravanopdeha | - | + | - | - | |
| Sweda | + | - | + | + | - |
| Dehe chikkanata | - | - | - | - | + |

So poorvarupa symptoms go hand in hand with the symptomatology of following clinical condition.

- Prediabetic Stage
- Early Diabetes
- Subclinical diabetes.

It is evident that certain features of purvarupa of prameha point towards signs and symptoms of neuropathy. Though modern science considers neuropathy as microvascular complication of Diabetes but recent studies suggest that 10 to 18 percent of patients have evidence of nerve

damage at the time their diabetes is diagnosed, suggesting that even early impairment of glucose handling, classified as prediabetes, is associated with neuropathy. The symptoms are the type of small fiber neuropathy pathologically characterized by loss of intradermal nerve fibers. Several studies have also suggested that IGT may lead to polyneuropathy, reporting rates of IGT in patients with chronic idiopathic polyneuropathies between 30 and 50%.

RUPA

According to Sushrutacharya, the person should be diagnosed as pramehi when complete or partial prodromal symptoms of prameha accompanied by polyuria gets manifested.

Gayadasa opines on this assertion that in this ailment all prodromal symptoms gets converted into Rupa because of the specific nature of the disease i.e. Vyadhiprabhava. From, above description, it can be postulated that the prodromal symptoms along with main symptoms continues as disease progresses.

GENERAL SYMPTOMATOLOGY: (A) Urine Characteristics

(1) Prabhuta Mutrata (Quantity)

This is the cardinal sign of prameha described by all acharyas. Gayadasa opines on Su.Ni.6/6 that excess urine quantity is because of liquification of the dushyas and their amalgamation.

(2) Avila Mutrata (Turbidity)

Patient passes urine having hazy consistency .Gayadasa & Dalhana opine that, the characteristic features of urine is because of the nexus between Mutra, Dosha & Dushya.

(3) Pichhila Mutrata (Consistency)

At the time of diagnosis, Charaka mentioned to consider the etiological factors also to assess the involved dosha after knowing the character of urine, pichhila & madhura.

(4) Kashyapa: has described the symptoms listed here.

- (a) Akasmata Mutra Nirgama: Child excretes urine suddenly without any intention.
- (b) Makshika Akranta Mutra : Flies get attracted towards the urine.
- (c) Shweta & Ghana mutrata: Child passes urine having shweta colour & turbidity.

(B) Associated Signs & Symptoms

Acharaya Sushruta has described two types of prameha -

Sahaja Pramehi (Krisha-Asthenic)

- Ruksha (Dry body)
- Alpashi (consumes less food)
- Bhrish Pipasa (Voracious thirst)
- Parisarpansheelata (Restless, always desires to wander)

Apathyanimittaja (Sthula-Obese)

- Bahuashi (Voracious eater)
- Snigdha (Unctuous body texture)
- Shayyasanswapnasheela (Like to sit down & sleep always)

Acharya Kashyapa has also narrated symptoms like Gaurava (Heaviness of the body), Baddhata (tightness) & Jadata (Steadiness, laziness).

SAMPRAPTI**SAMPRAPTI ACCORDING TO DOSHIKA PREDOMINANCE****1) Kaphaja Prameha**

Charaka says that etiological factor first causes the provocation of Kapha because of the close resembles to the related hetu. This provoked Kapha spreads all over the body quickly because of the Sharirashaitilya (weak assemblage in between tissues). While spreading it get mixed with meda dhatu, which is excess in quantity and Abadha and having concordant properties with Kapha. That's why get vitiated first. This annexation of vitiated meda and Kapha comes in contact with Sharira-kleda and mamsa, which are already in excess quantity resulting Putimamsa pidaka. On the other hand the vitiated Kleda gets converted into Mutra. The Kapha along with Meda and Kleda covers the openings of mutravaha Srotasa resulting into Prameha.^[16]

Sushruta narrated Dushyas in each doshika type of Prameha. He narrated vitiation of Kapha along with Vata, Pita and Meda in Kaphaja Prameha.^[17]

2) Pittaja prameha

Provoked Pitta due to its etiological factors manifests as Pittaja Prameha Here same

pathogenesis occurs as described in Kaphaja Prameha.^[18] Depending on different properties of Pitta Dosha the Paittika Prameha develops into six types. Pittaja Prameha is not purely Paittika but it does have Pitta predominance.

Sushruta narrated Shonita along with Vata, Kapha and Meda in the pathogenesis of Pittaja Prameha. More or less similar pathology is described in Ashtanga Sangraha and Ashtanga Hridaya.^[19] In Ashtanga Sangraha, Vagbhata says that as the disease Kaphaja Prameha gets chronic, Kshaya of Kaphadi Dhatus occurs and thus Pitta is vitiated resulting in the manifestation of Pittaja Prameha.^[20] Ashtanga Hridaya mentions that Pitta vitiates the Rakta producing Pittaja Prameha and rest description is similar to Ashtanga Sangraha.^[21]

3) Vataja prameha

Acharya Charaka explained the detailed samprapti of vataja prameha i.e.

Vata aggravated due to its own etiological factors draws out Sarabhuta dhatus from the body and carries them towards basti resulting into four types of Vataja Prameha.

Similar description is available in Ashtanga Hridaya.^[22]

Another pathogenesis of Vataja Prameha is narrated in Chikitsa Sthana that provoked Vata due to depletion of other two Dosha carries vital dhatus towards basti, resulting into Vataja Prameha. Sushruta narrated the typical Dushya Sangraha according to Dosha. He explained that, In Vataja Prameha, Kapha, Pitta, Meda, Vasa and Majja take part in pathogenesis.

SAMPRAPTI OF MADHUMEHA

When sadhya roga changes into krichrasadhya or asadhya it can be called as vidhi samprapti. It commonly occurs in the untreated condition. As far as madhumeha is concerned, we can partly include it in vidhi samprapti. Acharya Sushruta explains it as if all the pramehas are not treated first, they will gradually pass to stage of madhumeha. Acharya charaka has described madhumeha vividly. Vagbhattacharya divides madhumeha into two types, according to samprapti - dhatukshayajanya madhumeha and avaranjanya madhumeha.

Dhatukshayajanya Madhumeha^[23]

The kshaya of vital dhatus vasa, majja, lasika and oja leads to vataprakopa. This vitiated vata further makes ksharana of these dhatus through mutravaha srotas resulting in Vasameha, Majjameha, Hastimeha & Madhumeha respectively. When kapha and pitta gets depleted the

vata provocation occurs and it leads to depletion of vasadi dhatus.

Avaranajanya Madhumeha^[24]

Aharas with a predominance of guru, snigdha, amla and other kaphapittakara substances, leads to the provocation of kapha and pitta doshas. Which in turn vitiates medas and mamsa. These increased dosha-dushya causes vata avarana by which gati or movement of vatadosha is obstructed. Finally vitiated vata attracts and carry the oja towards basti resulting in the madhumeha condition.

SAMPRAPTI GHATAKAS

Dosha

Kapha: Bahu +Abaddha in avaranjanya madhumeha Kshina in dhatukshayajanya madhumeha

Pitta: Vriddha-in avaranjanya madhumeha Kshina- in dhatukshayajanya madhumeha

Vata: Avritta- in avaranjanya madhumeha Vriddha-in dhatukshayajanya madhumeha

Dushyas: Rasa, Rakta, Mamsa, Meda, Majja, Vasa, Lasika, Oja, Shukra, Ambu.^[25] Sweda.^[26]

Srotas: Medovaha, Mutravaha, Udakavaha

Srotodushti: Atipravritti, Sanga

Sanchaya : Tissue level

Prakopa: Sarva sharira

Prasara: Rasayani

Sthanasamshraya: Mutravaha Srotas

Agni: Dhatwagnimandya

Ama: Dhatugata (Aparipakwa Dhatu)

Udbahva: Amashaya

Swabhava : Chirkari

Complications of Madhumeha

Acharaya Charaka has mentioned 7 types of pidaka as complication of madhumeha, While Sushruta & Vagbhatta has mentioned 10 pidakas. Sushruta has mentioned that madhumeha along with pidaka is asadhya. He narrated that these pidaka occurs due to Tridosha and vitiated meda & mamsa. These pidakas are as follows.

| Pidaka | Charaka | Sushruta | Vagbhatta |
|---------------|----------------|-----------------|------------------|
| Sharavika | + | + | + |
| Kacchhapika | + | + | + |
| Jalini | + | + | + |

| | | | |
|----------|---|---|---|
| Sarshapi | + | + | + |
| Alaji | + | + | + |
| Vinata | + | + | + |
| Vidradhi | + | + | + |
| Putrini | - | + | + |
| Masurika | - | + | + |
| Vidarika | - | + | + |

SADHYASADHYATA

Generally the concept of prognosis in the case of prameha re given by all acharyas as-
Kaphaja Prameha-Sadhya

Pittaja Prameha-Yapya

Vataja Prameha-Asadhya when occurred due to dhatukshaya & Krichrasadhya when established due to avarana.

PATHYA-APATHYA

Pathya is having a key role in the management of Madhumeha. Pathya and Apathya Aharas and Viharas according to different Ayurvedic classics are as follows

Pathya

(a) Aahara

- **Shook Dhanya:** Jeerna Shali, Shashtika, Kodrava, Yava, Godhuma, Uddalaka, Shyamaka
- **Shimbi Dhanya :** Chanaka, Adhaki, Kulattha, Mudga
- **Shaka Varga :** The leafy vegetables with a predominance of tikta-kashaya rasa, Patola, Karvellaka, Shigru
- **Phala Varga:** Jambu, Dadima, Shringataka, Amalaki, Kapittha, Tinduka, Kharjura, Kalinga, Navina Mocha.
- **Mamsa Varga :** Vishkira mamsa, Pratuda, Jangala mamsa
- **Taila Varga :** Danti, Ingudi, Sarshapa , Atasi
- **Udaka Varga :** Sarodaka, Kushodaka, Madhudaka
- **Kritanna Varga:** Apupa, Saktu, Yavodana, Vatya, Yusha
- **Others :** Madhu, Hingu, Saindhava, Maricha, Lasuna

(b) Vihara

To have walks, travelling on elephants, horses and different plays, different form of marshal arts, roaming in different places without chappal and umbrella.

Apathya**(a) Aahara**

Jala, Milk, Ghee, Oils, Curd, Sugar, Different types of rice preparations, anupa, gramya and audaka mamsa, Ikshurasa, Pishtanna, Navanna.

(b) Vihara

Eksthana asana, Divaswapa, Dhoompana, Sweda, Raktamoksha, Mutravega dharana.

CHIKITSA (TREATMENT)

“*Prameha anushanginama*” i.e Prameha is having highest tendency to recur. This indicates long lasting nature of disease. Treatment of Prameha requires to manage many factors i. e. amshamsha ghatakas at each stage of disease. Treatment of disease should be carried out in such a way that it must not give rise to another disease.

Treatment According to Body Constitution***Krishha Pramehi***

People who are having thin body constitution and who are weak, must be nourished. Status of *agni* must be taken into consideration. Things that will improve patient’s condition but which will not contribute to the pathogenesis of disease by their *brimhana* nature must be managed.

Sthula and Balwana Pramehi

In those patients who are strong and who are having *doshas* in excess quantity, *Shodhana Chikitsa* must be carried out. *Samshodhana Chikitsa* varies according to the types of *Prameha*.

TREATMENT ACCORDING TO DOSHA PREDOMINANCE

Though the disease is of Tridosha predominant, but individual Doshika consideration for the treatment is important for good prognosis.

KAPHAJA PRAMEHA

Shodhana

I) Vamana and Virechana

Ideal treatment therapy for Kapha vitiation. Vagbhata and Sushruta mentioned that after the ingestion of medicated oil or Ghrita. We can use Vamana Karma should be done with due consideration of strength of the patient.

Dalhana further commented that after Vamana Karma, Virechana is essential to alleviate the Prameha and also to reduce the Kleda vitiation.

ii) Basti

After the Vamana and Virechana, Basti can be administered specially Asthapana. Arundatta specially commented^[27] that after completion of Vamana and Virechana, if patient has strength then Asthapana Basti can be administered.

Application of Paraprocedures

Following Paraprocedures can be considered:

- Udavartana
- Snana and Jalavaseka
- Vilepana
- Vyayama: Exercise
- Lekhana and Apatarpana Chikitsa

SHAMAN CHIKITSA

Charakacharya gives 10 combinations of drugs to all the mehas with kapha predominance.^[28] According to Sushruta, after proper samshodhana the patient should use swarasa of amalaki with Haridra powder with madhu. Acharya Sushruta in this context explains single drug decoctions with separate indications in 5 types of kaphaja meha & combinations in other 5 types.^[29]

Vagbhattacharya describes three yogas in this aspect. They are as follows.^[30]

- (i) Lodhradi- Lodhra, Abhaya, Musta, Katphala
- (ii) Pathadi - Patha, Vidanga, Arjuna, Dhanyaka
- (iii) Gayatrayadi - Khadirsara, Darvi, Vidanga, Vacha.

PITTAJA PRAMEHA

(i) Samshodhan Chikitsa

Virechan is best in pittaja pramehas. The drugs which are sufficient to eliminate morbid pitta can be used with sheeta and other tikta, kashaya rasa in this. Nyagrodhadi gana kwatha is advised for Asthapanabasti by Acharya Vagbhata. Acharya Sushruta has described that due to spreading of medo dhatu all over the body, Madhumehi subjects are durvirechya.^[31]

(ii) Samshaman Chikitsa

Acharya Charaka explains 10 pada yogas in this aspect to treat pittaja pramehas. Sushrutacharya has described 6 specific kwatha yogas for the specific type of pittaja prameha.^[29] The three kwatha yogas explained by Acharya Vagbhatta are,

(i) Ushiradi: Ushira, Lodhra, Arjuna, Chandana.

(ii) Patoladi: Patola, Nimba, Amalaki, Amrita

(iii) Lodhradi: Lodhra, Ambu, Kaleyaka, Dhataki^[32]

VATAJA PRAMEHA

Although vatika mehas are incurable still Acharya Charaka explains to induce certain treatment in kaphapittanubandhi Vatika meha.^[33]

DIABETIC NEUROPATHY IN AYURVEDA

In Ayurvedic text a very scientific description is available about Diabetes mellitus in the name of Madhumeha but we do not find any description of Diabetic neuropathy hence we follow the advice of ancient Acharyas who have said “its not always essential to name a disease as its impossible to name all. Nothing else but these are vitiated dosas which due to different etiological factors, produce different diseases in different organs in different people. Therefore one should consider about the nature of the disease (Prakriti), the organ involved (Adhistana) and the etiological factors (Samuthana) and do the treatment accordingly”.

In the light of above statement if we try to understand Diabetic neuropathy in Ayurveda we find that though there is no direct reference to the disease in Samhitas but there are scattered mentions of the condition under the purvarupa, rupa and upadrava of Madhumeha . Infact, all the upadras mentioned by Charak do point towards some or the other form of neuropathy as mentioned below.

UPADRAVAS OF PRAMEHA IN RELATION TO DN**1. According to Charaka**

Acharya Charaka has mentioned eight upadras, all of which can be related to neuropathy in Modern terms. Thirst, diarrhea, fever, burning sensation, weakness, anorexia and indigestion are mentioned as complication of Prameha. Carbuncles like Alaji and Vidradhi which finally lead to petrification of muscles also can occur chronic cases.

| | | |
|-------------------------|-------------------|-----------------------|
| Trishna | Thirst | Autonomic neuropathy |
| Atisara | Diarrhea | Autonomic neuropathy |
| Daha | Burning sensation | Peripheral neuropathy |
| Daurbalya | Weakness | Peripheral neuropathy |
| Arochaka | Anorexia | Autonomic neuropathy |
| Avipaka | Indigestion | Autonomic neuropathy |
| Putimamasa | Carbuncle | Peripheral neuropathy |
| Pidaka, alaji, vidradhi | Carbuncle | Peripheral neuropathy |

2. According to Sushruta

Upadravas of Kaphaja Prameha-

| | | |
|----|-------------------|--------------------------------|
| 1 | Makshikopsarpanam | Sitting of flies over the body |
| 2 | Alasya | Lassitude |
| 3 | Pratishyaya | Corryza |
| 4 | Mamsopchaya | Muscular hypertrophy |
| 5 | Shaithilya | Letharge |
| 6 | Arochaka | Anorexia |
| 7 | Avipaka | Indigestion |
| 8 | Kaphapraseka | Mucus discharge |
| 9 | Chardi | Vomiting |
| 10 | Anidra | Insomnia |
| 11 | Kasa | Cough |
| 12 | Swasa | Breathlessness |

Upadravas of Pittaja Prameha

| | | | |
|----|-----------------------|------------------------------------------------|-----|
| 1 | Vrishanayoravadaranam | Tearing sensation in both the testes | P.N |
| 2 | Bastibheda | Tearing pain of urinary bladder | P.N |
| 3 | Medratoda | Pricking pain in penis | P.N |
| 4 | Hridayashool | Precardiac pain | A.N |
| 5 | Amlika | Sour eructation | A.N |
| 6 | Jwara | Fever | - |
| 7 | Atisara | Diarrhoea | A.N |
| 8 | Arochaka | Anorexia | A.N |
| 9 | Vamathu | Vomiting | A.N |
| 10 | Paridhoopaman | Feeling of emission of fumes all over the body | P.N |
| 11 | Daha | Burning sensation | P.N |
| 12 | Murcha | Unconsciousness | A.N |
| 13 | Pipasa | Thirst | A.N |
| 14 | Nidra nash | Insomnia | A.N |
| 15 | Pandu roga | Anaemia | A.N |
| 16 | Peeta vida | Yellow colouration of stool | A.N |
| 17 | Peeta netra mutram | Yellow colouration of urine and eyes | A.N |

Upadravas of Vataja Prameha

| | | | |
|---|-------------------|------------------------------------------|-----|
| 1 | Hridgraha | Constricting sensation of the precardium | A.N |
| 2 | Laulya | Craving for different tastes | A.N |
| 3 | Anidra | Insomnia | A.N |
| 4 | Stambha | Rigidity | P.N |
| 5 | Kampa | Tremors | P.N |
| 6 | Shoolam | Various types of pain | P.N |
| 7 | Baddhapurishatvam | Constipation | A.N |

From the foregoing it is evident that Ayurvedic physicians well versed with the complications of Madhumeha from the very beginning and they mentioned some of the complications even under the headings of Purvarupa and Rupa also. Murchha is described as Upadrava of Pittaja Prameha, which can be correlated to syncope which is a feature of Diabetic Autonomic neuropathy and can also be correlated to Ketoacidotic and Hyperosmolar coma. Chhardi which have been mentioned as the Upadrava of Kaphaja Prameha may be accepted as the vomiting which can occur in Diabetes either due to autonomic neuropathy or Ketoacidosis. Charaka has mentioned in the Samprapti of Prameha that Meda and Kleda get deposited in the channels of Mutravaha Srotasa. This may be regarded as Diabetic Nephropathy. Ayurvedic scholars were also well aware of the cardiac complications as Hridshula and Hridgraha are mentioned as Upadrava of Pittaja and Vataja Prameha or Madhumeha respectively. Symptoms named Daha, Shula, Suptata angeshu, Purishabaddhata, Atisara, Udavarta and Shosha points towards different Diabetic Neuropathies. Description of Prameha Pidika is similar to furunculosis and carbuncles. Putimamsa may be inferred as gangrene or foot ulcers. Kasa and Shwasa have been mentioned as Upadrava of Kaphaja Prameha, this can be found in diabetic patients as a result of respiratory infection exaggerated by Diabetes mellitus. Hypoglycemia never occurs with Ayurvedic medicines so it found no place in Ayurvedic texts. Similarly, the retinopathy of Diabetes seldom produce any symptoms and cataract, glaucoma are also very rare. Probably that is why these have not been counted by the Ayurvedic scholars of ancient times.

DIABETIC NEUROPATHY MODERN DESCRIPTIONS

Diabetic neuropathy refers to a spectrum of nerve disorders caused by diabetes mellitus. It affects both type 1 and type 2 diabetes patients and may involve sensory, motor, and autonomic nerves. The condition develops gradually and often remains undetected in its early stages.^[34]

Epidemiology

Incidence

Diabetic neuropathy is the most common complication of diabetes, affecting approximately 50% of patients with long-standing disease.^[35] The prevalence increases with duration of diabetes and may even be present in prediabetic conditions. Major risk factors include chronic hyperglycemia, dyslipidemia, hypertension, and smoking.^[36]

Pathophysiology

The pathogenesis of diabetic neuropathy is multifactorial and involves several metabolic and vascular mechanisms. Chronic hyperglycemia leads to increased oxidative stress, activation of the polyol pathway, formation of advanced glycation end products (AGEs), and microvascular dysfunction.^[37] These changes ultimately result in nerve ischemia and axonal degeneration.^[38]

Clinical Features

The clinical presentation varies depending on the type of neuropathy.

Peripheral neuropathy

- Burning sensation
- Tingling and numbness
- Loss of vibration and temperature sensation
- “Glove and stocking” pattern

Autonomic neuropathy

- Orthostatic hypotension
- Gastroparesis
- Bladder dysfunction
- Erectile dysfunction

Advanced stages may lead to foot ulceration and amputation, significantly impairing quality of life.^[34]

Diagnosis

Diagnosis is primarily clinical and supported by neurological examination and simple bedside tests such as monofilament testing and vibration perception assessment.^[36] Nerve conduction studies may be used for confirmation in selected cases.

Management

a) Glycemic Control

Strict glycemic control remains the cornerstone for prevention and progression delay of diabetic neuropathy.^[39]

b) Pharmacological Treatment

Management of neuropathic pain includes

- Antidepressants (e.g., duloxetine)
- Anticonvulsants (e.g., pregabalin)
- Neuroregenerative agent and Coenzyme(Methylcobalamin)
- Topical therapies

c) Lifestyle Modifications

- Regular physical activity
- Balanced diet
- Smoking cessation
- Proper foot care

d) Emerging Therapies

Recent research is focused on therapies targeting oxidative stress, inflammation, and nerve regeneration.^[40]

Complications

Diabetic neuropathy is associated with serious complications such as foot ulcers, infections, and amputations. It is one of the leading causes of non-traumatic lower limb amputation worldwide.^[34]

DISCUSSION

The present integrative review highlights a striking conceptual and clinical overlap between Madhumeha described in Ayurveda and diabetic neuropathy recognized in modern medicine. Although originating from distinct epistemological frameworks, both systems converge on the understanding that chronic metabolic derangement leads to progressive tissue and nerve damage. From an Ayurvedic perspective, Madhumeha represents the advanced stage of Prameha, predominantly characterized by Vata aggravation following Kapha and Pitta vitiation, ultimately resulting in Dhatukshaya and Ojakshaya. This degenerative process

mirrors the chronicity and progressive nature of diabetes mellitus. The description of neurological manifestations such as Suptata (numbness), Daha (burning sensation), and Sparsha-hani (loss of sensation) closely parallels the clinical features of diabetic peripheral neuropathy, including sensory loss, paresthesia, and neuropathic pain. The Ayurvedic concept of Avarana (obstruction of Vata by Kapha and Meda) and Dhatukshaya (tissue depletion) provides a meaningful framework to interpret the pathophysiology of diabetic neuropathy. In the early stages, Avaranajanya Madhumeha may be correlated with insulin resistance and metabolic syndrome, where excess Meda (adiposity) and Kapha obstruct normal physiological processes. As the disease progresses, Dhatukshayajanya Madhumeha reflects the degenerative phase, comparable to chronic hyperglycemia-induced neuronal damage, axonal degeneration, and nerve ischemia seen in modern medicine. Modern biomedical science explains diabetic neuropathy through mechanisms such as oxidative stress, activation of the polyol pathway, accumulation of advanced glycation end-products (AGEs), and microvascular insufficiency. These processes ultimately lead to nerve hypoxia and structural damage. Interestingly, these mechanisms can be conceptually aligned with Ayurvedic notions of Dhatvagnimandya (impaired tissue metabolism), Ama formation, and Srotodushti (microchannel dysfunction), all of which contribute to impaired nourishment of nerves (Majja Dhatu). Furthermore, the presence of neuropathic features even in prediabetic stages aligns with the Ayurvedic description of Purvarupa, where early symptoms such as tingling, burning sensation, and numbness appear before full disease manifestation. This emphasizes the predictive and preventive strength of Ayurvedic diagnostics.

In terms of management, Ayurveda adopts a holistic and stage-wise approach, including:

- Nidana Parivarjana (elimination of causative factors),
- Shodhana Chikitsa (bio-cleansing therapies),
- Shamana Chikitsa (palliative treatment), and
- Rasayana (rejuvenative therapy).

These interventions aim not only at glycemic control but also at restoring systemic balance, improving tissue nutrition, and preventing complications. In contrast, modern management focuses primarily on glycemic control, symptomatic relief of neuropathic pain, and lifestyle modifications. While effective in delaying progression, it often lacks regenerative and preventive depth. An integrative approach combining Ayurvedic principles with modern therapeutic strategies may therefore offer a more comprehensive model. Ayurveda's emphasis

on early intervention, metabolic correction, and neuroprotection could complement modern pharmacological management, particularly in preventing or slowing neuropathic complications.

CONCLUSION

Madhumeha, as described in Ayurveda, shows a strong conceptual and clinical correlation with diabetes mellitus and its complication, diabetic neuropathy. The progression from Kapha predominance to Vata aggravation and Dhatukshaya parallels the transition from metabolic dysfunction to chronic degenerative complications observed in modern medicine. The neurological manifestations described in classical Ayurvedic texts closely resemble those of diabetic neuropathy, indicating that ancient scholars had a profound understanding of disease progression and its complications. The alignment between Ayurvedic concepts such as Avarana, Dhatukshaya, Ama, and Srotodushti with modern mechanisms like oxidative stress, microvascular damage, and neuronal degeneration underscores the scientific relevance of Ayurvedic pathology.

This review supports the need for an evidence-based integrative approach, where Ayurvedic preventive and therapeutic strategies are combined with modern medical management to enhance patient outcomes. Future interdisciplinary research should focus on validating Ayurvedic interventions through clinical trials, particularly in the prevention and management of diabetic neuropathy. Such integration has the potential to not only improve quality of life but also reduce the global burden of diabetes-related complications through a more holistic and sustainable healthcare model.

ACKNOWLEDGEMENT

The authors sincerely acknowledge the guidance and support provided by their mentors, colleagues, and affiliated institutions. They also extend their appreciation to all individuals whose valuable contributions and insights played an important role in the development of this work.

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