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# The systematic review on *Madhumeha* w.r.t. Diabetic Neuropathy and its management: A review article

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## ABSTRACT

The world's fastest-growing major illness is diabetes mellitus. It's a metabolic illness that could lead to an insufficiency or malfunction in the production of insulin. Many of the *Samhitas* contain detailed descriptions of *Madhumeha*. Diabetic neuropathy is most common complication of Diabetes, approximately 50% of patients with diabetes eventually develop neuropathy. Symptoms of diabetic neuropathy not directly mentioned in Ayurveda but symptoms like *Suptata*, *Chumchumayan*, *Karpada Daha*, seen in *Prameha* either in *Prameha* prodromal stage, exhibition stage or in complication stage. As *Samprapti* of diabetic neuropathy not clearly mentioned in *Samhitas* so, after reviewing different *Samhitas*, a *Samprapti* has been suggested with possible management of Diabetic neuropathy in Ayurveda i.e., *Shodhan* and *Samana Chikitsa* and mode of action of *Shodhan Chikitsa*.

**Key words:** Diabetes, Diabetic Neuropathy, Radiculopathy.

## INTRODUCTION

'Maheshu Uccha Madhu Ev Madhuram Mehati' which means that one which is superior to all other *Meha* and is categorized by passage of urine as sweet as honey i.e., *Madhumeha*.<sup>[1]</sup> 'Mahatyaya'<sup>[2]</sup> is the term given to *Madhumeha* in classical *Samhitas* which means *Mahavyapattikara* (causing severe complication). It shows complex disease process involving all three *Dosha's* (*Vata*, *Pitta*, *Kapha*) and most of the body components i.e., *Dushyas* (*Rasa*, *Asrika*, *Mamsa*, *Meda*, *Majja*, *Shukra*, *Ambu*, *Vasa*, *Lasika*, *Ojas* and *Sweda*).<sup>[3]</sup> Moreover, the involvement of *Asthi* cannot be ignored

as growth of *Kesha* and *Nakha* which is described in *Purvarupa*.<sup>[4]</sup>

### *Nidana of Madhumeha*

*Avyayma*<sup>[5]</sup> (lack of exercise), *Atapasevana*<sup>[6]</sup> (exposure to sunlight), *Agni Santapa* (Proximity to fire), *Ajirna Bhojana* (indigestion), *Anashana* (fasting), *Vega Dharana* (controlling natural urges), *Abhighata* (Injury), *Divaswapna* (day sleep), *Alasya* (lazy), *Krodha* (anger), *Shoka* (sad), *Atiyoga of Vamana*, *Virechana*, *Asthapana Nasya*.<sup>[7]</sup>

**Dietary factors:** Overindulgence in yoghurt, fish, milk, new grains, sugar-containing foods and beverages, and jaggery (raw cane sugar) foods that are cold, sweet, difficult to digest, and slimy in nature.<sup>[8]</sup>

**Lifestyle factors:** A sedentary way of life, excessive sitting, sleeping too much, napping during the day, indolence, and lack of exercise.<sup>[9]</sup>

**Psychological factors:** Mental illness brought on by psychological extremes like bipolar disorder and *Vishada* (depression).

### *Samprapti (Etiological factors)*

The person intaking food substances which are having *Guru*, *Snigdha* quality, *Amla* and *Lavana Rasa*,

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*Navannapana*, in large quantity and indulge in excessive sleep, avoiding exercises, sitting in a same place for longer duration, abstinence of mental activity and also not performing the *Shodhana* process in a proper time are prone to get *Prameha*. According to *Acharya Sushruta*, if *Prameha* is left untreated, it gets converted into *Madhumeha* and becomes incurable. *Acharya Vagbhatta* says that the urine of *Madhumehi* will be similar to that of *Madhu*. *Prakupita Vata* plays an important role in *Samprapti* of *Madhumeha*. *Vata Prakopa* occurs mainly due to two causes - *Dhatu Kshaya* and *Marga Avarodha*.

*Madhumeha Samprapti* can be broadly classified into 2 types - *Avaranjanya* and another is *Kshayatmaka*. *Avaranjanya* is by *Pitta* and *Kapha* and *Kshayatmaka* is due to *Vata*. *Chala Guna* of *Vata* declines by *Avarana* of *Kapha* and *pitta* and hindering normal nerve impulse conduction and worsening of myelin sheath.

The fatty white matter that surrounds nerve cells' axons to form the electrically insulating layer is known as the myelin sheath of neurons. Proteins make up 15-30% of myelin, lipids make up 70-85% of the dry mass, and water makes up about 40%.

On later stage of disease due to *Vata-Prakopa* occurs which causes *Dhatukshaya* and eventually leads to *Ojakshaya*.

As *Ojas* is the essence of *Sapta Dhatus*. *Oja* is of two type *Para* and *Apara Ojas*, *Pramana* of *Apara Oja* is *Ardha Anjali Pramana* and is *Sleshmika* in nature, and this *Apara Oja* losses through urine in this *Vata Prakopa* stage of *Madhumeha*. In both stages, *Avaranjanya* and *Kshyajanya* proper functioning of *Vyana Vayu* doesn't occur which leading to signs and symptoms of diabetic neuropathy. Long-term exposure to the same *Nidana* causes ongoing vitiation of *Dosha*, *Dhatu* and *Mala*. As a result, the disease advances to the point of complications that can lead to a number of different diseases collectively referred to as *Upadrava*.

The different references of neuropathy symptoms of Diabetes featured as *Purvarupa*, *Roopa*, *Updravas* of *Prameha* are mentioned as:

### Numbness

- *Supti Prameha Purvarooopa (C.S)*,
- *Tawkgata Vata (S.S)*
- *Karasupti Prameha Purvarooopa (C.S)*
- *Padasupti Vatajananatmajvikara (C.S)*
- *Angasupti Twakgata Vata (S.S)*

### Tingling sensation

- *Chumuchumayana Tawkgata Vata (S.S)*
- *Harsha/Roma-Harsha Kaphayukta-Udana (S.S)*
- *Samanayukta-Kapha (S.S)*
- *Harsha-Pippilika Mamsavrita Vata Sancharan (C.S)*

### Needling sensation

- *Suchiribhiv-Nistodam Shonitavrita Vata (S.S)*
- *Suchiribhiv-tudyate Asthiavrita Vata (C.S)*

### Burning sensation

- *Daha Prameha-Purvarupa (C.S)*
- *Prameha Updrava (C.S)*
- *Vidaha Pittananatmaja Vikar*

### Diabetic Neuropathy

India is the diabetes capital of the world with approximately about 109 million individuals are affected with the diabetes by 2035. Patients with Diabetic mellitus about 7.5% to 24% experience significant neuropathic pain. Diabetic neuropathy is the nerve damage happening in the body due to uncontrolled blood glucose. Depending on the affected nerve, symptoms of diabetic neuropathy can range from pain and numbness in bilateral or unilateral lower limbs especially soles and may affect the digestive system, urinary tract, blood vessels and heart. The symptoms range from mild to severely painful and disabling which may hamper the quality of life of the patient.

Small unmyelinated nerve fibers are affected in diabetic mellitus which is responsible for pain and temperature sensation. Although it can occur in both type 1 and type 2 diabetes mellitus, there is a higher

prevalence in type 2. Globally, diabetic neuropathy affects approximately 132 million people as of 2010 (1.9%) of the population. There is a higher prevalence (60.4%) and incidence 8.76% of sensory peripheral neuropathy in diabetic patients. It may go on increasing as the age progress. It is an upcoming global problem which affects the daily life of the patients.

There are mainly four types of neuropathies. Symptoms will depend upon the type of nerves affected. The symptoms usually develop gradually.

**1. Peripheral neuropathy**

- Commonest type
- 1<sup>st</sup> affect the legs and feet then hand and arms
- Worsen at night

**2. Autonomic neuropathy**

The heart, bladder, stomach, colon, sex organs, and eyes are all under the control of the autonomic nervous system. These organ-related symptoms will manifest if diabetes mellitus has an impact on the autonomic nervous system.

**3. Radiculoplexus neuropathy (Diabetic amyotrophy)**

- Common in patient of type 2 Diabetes and older adults.
- Affects nerves in thigh, hip, buttock and legs.

**4. Mononeuropathy;** This neuropathy focal in nature and damage to a specific nerve in the face, middle of the body(torso)or legs. Its more common in the older adults.

Symptoms may present as follows;

Peripheral neuropathy	Autonomic neuropathy
1. Loss or reduced sensation of pain and temperature and numbness.	1. Incontinence, UTI and urine retention when it affects bladder.
2. Tingling or burning sensation	2. GI symptoms like nausea, vomiting, bloating, loss of appetite, dysphagia, slow stomach

	emptying, constipation, diarrhoea or both.
3. Sharp pain or cramps	3. Increased or decreased perspiration, difficulty in controlling body temperature
4. Hyper-sensitivity to touch-for some people even the weight of the thin blanket can be painful.	4. Increased heart rate at rest
5. Muscle weakness and areflexia specially in the ankle.	5. Decreased sexual response.
6. Loss of balance and coordination	-----

Radiculoplexus neuropathy	Mononeuropathy
1. Severe pain in hip and thigh or buttocks that occurs in a day or more.	1. Pain in sheen or foot.
2. Eventual weak and shrinking thigh muscles	2. Pain in lower back or pelvic
3. Difficulty in raising from a sitting position	3. Pain in front of thigh
4. Abdominal swelling if the abdomen is affected.	4. Pain in chest or abdomen
5. Weight loss	-----

**AIM AND OBJECTIVES**

1. To review the available literature in ayurvedic text and its correlation with modern literature on Diabetic Neuropathy
2. To review *Madhumeha* in the context of Diabetic neuropathy and its management.

**MATERIALS AND METHODS**

*Madhumeha* has been explained decoratively in *Brihatrayi* by *Acharya Charak, Sushruta, Vagbhata*. From the period of *Charak, Madhumeha* has been

described as a separate disease which usually occurs as the result of untreated *Prameha*.

### Management of Diabetic Neuropathy

#### Shodhana Chikitsa

*Vata Dosha* is always involved in cases of diabetic polyneuropathy. *Vata Prakopa* is primarily responsible for nerve degeneration, and *Madhumeha* is of *Vataja Prameha*. A major manifestation of *Majja Dushti*, which causes demyelination of nerve fibers due to microvasculopathy and hyperglycemic injury to nerve cells, is diabetic polyneuropathy. This condition is caused by the morbid increase in *Dhatu*s prior to *Medas* and the consequent lack of *Poshana* of *Uttara Dhatu*s, i.e., *Asthi*, *Majja*, and *Shukra*. In *Majja Dushti*, *Arumshika*, *Timira* has been mentioned which can be correlated to diabetic retinopathy and diabetic carbuncles. In *Shodhana Chikitsa*, *Basti Karma* and *Virechana* procedures will help to reduce the symptoms of diabetic neuropathy.

#### Probable role of Basti in Diabetic neuropathy

*Shodhana Chikitsa* breaks the pathogenesis of disease and balances vitiated *Doshas*. For the purpose of managing *Avaranajanya Madhumeha*, *Basti Karma* aids in the normalization of *Vata*, *Kapha*, *Meda*, *Kleda*, and *Sneha*. *Basti* plays a major role in the pathophysiology of *Madhumeha* by assisting in the control of *Vyana* and *Apana Vayus*. *Basti* lowers *Santapa*, *Anidra*, *Bhrama*, and *Shirahshoola*, all of which can cause diabetes.

#### Probable role of Virechana in Diabetic neuropathy

*Virechana* helps to subside *Pittaja Lakshana* like *Karapada-Daha*, *Suptata* (Numbness) and *Daha* (Burning sensation). Thus, Diabetic neuropathy symptoms will be pacified.

And other procedures like *Abhyanga*, *Udvardan*, *Potali Sweda*.<sup>[10]</sup>

#### Shaman Chikitsa

Effective drugs in Diabetic Neuropathy	Form
1. <i>Dashamoola</i>	<i>Kwath</i>
2. <i>Balaguduchi Ksheer</i> <sup>[11]</sup>	

3. <i>Jeevaniya- Balya Gana</i>	<i>Kwath</i>
4. <i>Sudha Shilajatu</i>	<i>Vati, Gutika, Lauha</i>
5. <i>Triphala</i>	<i>Churna</i>
6. <i>Ashwagandha</i> <sup>[12]</sup>	<i>Churna, Vati</i>
7. <i>Atibala Moola</i>	<i>Kwath</i>
8. <i>Bhumyamalaki</i>	<i>Churna</i>
9. <i>Guduchi Satwa</i>	<i>Vati, Churna</i>
10. <i>Yashada</i>	<i>Bhasma</i>

### DISCUSSION

There isn't a direct reference to DNP in the classic Ayurvedic texts. According to *Acharya Charak*, a *Vaidya* should take into account *Samuthana Visheshha* (the disease's causal factor), *Adhishtana* (the location of the disease's manifestation), and *Vikara Prakruti* (the nature of the disease) when diagnosing a patient. DPN should be interpreted in light of the *Dosha* predominance and is regarded as the *Upadrava* of *Madhumeha*.

As a *Prabhuta-Avila Mutrata* resulting from *Vataprakopaka Samprapti* and loss of *Saumya Dhatu*, DPN, according to Ayurveda, is a progressive complication phase of diabetes and can be understood as a *Vata-Pitta* dominant stage of *Prameha*. *Vata* becomes more vitiated and eventually transforms into *Madhumeha* (excessive turbid urination), which leads to the degeneration of the nerve's myelin sheath and pathological brittleness in the body.

As it is *Margavarodhajanya Vyadhi*, due to which further *Dhatu Poshana* does not occur, *Shodhana* and *Shamana Chikitsa* plays significant role in management of Diabetic neuropathy. As it is *Vata-Pitta Pradhana* pathological condition, Use of *Basti* and *Virechana Karma* plays significant role in management as it pacifies *Vata-Pittakara* symptoms such as *Karapada Daha*, *Suptata*, *Chimchimayana*. In *Shamana Chikitsa*, above mentioned drugs contains *Laghu*, *Ushna*, *Tiksha Guna*. *Katu Rasa* and the *Karma* of *Katu Rasa* plays significant role in *Samprapti Bhanga* of DPN as its

Karma are as follows - *Shodhayati, Agni Deepayati, Sneha-Sweda-Kleda Hanati, Margan Vivaranoti, Shleshma Shamayanti*. These drugs will clear the *Srotas* and due to *Rasayana, Balya, Vrishya* properties, *Poshana* of *Dhatu* will occur, which might initiate the process of nerve regeneration and further there will be improvement in nerve conduction.

## CONCLUSION

In current era due to desk bound lifestyle, Diabetes is one of the common metabolic diseases. Due to its chronicity, it is turning into painful DPN. In day-to-day practice, it is high time to find out the best solution to treat this condition. It is a big time to probe the list of application of Ayurvedic *Shodhana* and *Shamana Chikitsa*. *Shamana Chikitsa* act as a primary mode of care. The approach of *Shamana Chikitsa* helps to enhance the overall health of the body. Thus, Ayurveda is a better treatment option available to improve the quality of life of patients with Diabetic polyneuropathy.

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