

# Comprehensive Ayurvedic Management of Diabetic Neuropathy: A Clinical Case Report

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## KEYWORDS

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## ABSTRACT

Diabetes mellitus is a chronic multisystem disease with diverse clinical presentations and complications. Among these, diabetic neuropathy is a significant complication that can profoundly affect a patient's daily routine and mental well-being, thereby reducing their quality of life. Persistent hyperglycaemia is a major contributing factor to the development of diabetic neuropathy. Early detection and timely management are crucial to mitigate its progression and associated distress.

This case report presents a 52-year-old male with type 2 diabetes mellitus who reported burning sensation in the soles as the only clinical manifestation of diabetic neuropathy. The patient underwent comprehensive Ayurvedic management, including internal medications and Panchakarma therapies, like Udwarthana, Dashamoolaksheera dhara, Abhyanga, Pizhichil and Ksheera vasthi. Significant improvement was observed in the patient's symptoms and overall health, highlighting the potential of integrative Ayurvedic treatment approaches in addressing diabetic neuropathy. This case emphasizes the importance of early intervention and a holistic approach to improve patient outcomes and quality of life.

## INTRODUCTION

Diabetic neuropathy is a form of nerve damage caused by prolonged high blood sugar (glucose) levels in people with diabetes. It is a common and serious complication that impacts the nervous system. The most prevalent type, peripheral neuropathy, typically affects the feet and legs first, and in some cases, can extend to the arms and hands. Diabetic neuropathy can be defined as the presence of specific signs or symptoms indicative of nerve damage in individuals with diabetes mellitus, after ruling out other potential causes of neuronal injury.<sup>1</sup> It is one of the most prevalent complications encountered in diabetes mellitus and after 20 years of disease progression over 50% of the patients may develop this condition which can significantly affect their quality of life especially due to involvement of lower limbs.<sup>2</sup> By 2045, it is estimated that 783 million adults worldwide will be living with diabetes, with as many as 350 million potentially developing diabetic neuropathy and associated comorbidities.<sup>3</sup> Traditional risk factors such as elevated blood glucose levels, advancing age, dyslipidaemia, obesity, and smoking have consistently been linked to the development of diabetic neuropathy.<sup>4</sup>

Several classifications for diabetic neuropathy have been suggested in recent years; however, no single classification has gained universal acceptance. Recently, the American Diabetes Association categorized diabetic neuropathies into three primary types: (1) diffuse symmetric neuropathies, including distal symmetric polyneuropathy and autonomic neuropathy; (2) mononeuropathies, encompassing mononeuropathy, mononeuritis multiplex, and atypical forms; and (3) radiculopathy or polyradiculopathy.<sup>5</sup> Distal symmetric polyneuropathy (DSPN) is the most prevalent type of diabetic neuropathy, accounting for approximately 75% of cases. Its progression is typically chronic and gradual. Early in the disease, symptoms arise from small nerve fibre involvement, which is later followed by dysfunction in larger nerve fibres. Common symptoms of small nerve fibre damage include pain and dysesthesias, characterized by unpleasant burning sensations. Painful DSPN may also manifest as electric shock-like sensations, shooting pain, contact hyperalgesia, burning, lancinating pain, or tingling, with symptoms often intensifying or becoming more noticeable at night.<sup>5</sup>

Despite progress in understanding the pathogenesis of diabetic neuropathy, no disease-modifying therapies currently exist. Numerous potential targets have been explored, but most treatments have failed to effectively alter the disease course.<sup>6</sup> Effective management requires early diagnosis, optimal glycaemic control, and addressing associated risk factors like dyslipidaemia, hypertension, and obesity. Although no definitive disease-modifying therapies are currently available, a holistic and multidisciplinary approach focusing on symptom relief and prevention of progression is crucial. Ongoing research into novel treatments offers hope for improved outcomes in managing this challenging condition.

*Prameha*, as described in Ayurveda, is a condition involving multisystem involvement, where the interplay of multiple *doshas* and *dooshyas* contributes significantly to its pathology. This complex interaction results in manifestations of *Prameha* at various systemic levels, accompanied by a wide range of *purvarupas* (premonitory symptoms) and *upadravas* (complications).

On analysing the *purvarupas* of *Prameha* as explained by the *Acharyas*, many symptoms bear striking similarities to the clinical presentations and complications of diabetes mellitus. Notably, the complications of *Prameha* can be seen as severe or advanced manifestations of its *purvarupas*. Furthermore, the symptoms categorized under *Prameha*, including its *upadravas* for each *dosha*, show remarkable resemblance to diabetic neuropathy and other associated conditions. This highlights the comprehensive understanding of *Prameha* in Ayurveda, encompassing both early signs and progressive complications akin to modern medical interpretations of diabetes mellitus.

In Ayurveda, the cornerstone of treatment lies in *nidana parivarjana* (eliminating causative factors) and *samprapti vighatana* (disrupting the pathogenesis). In the management of *Prameha*, it is crucial to avoid *nidanans* (causative factors) that aggravate *kapha* and lead to *medo dushti* (vitiating of fat metabolism). By identifying and addressing these factors, we can prevent the progression of the disease to severe stages by averting *dosha-dooshya sammurchana* (vitiating *doshas* interacting with susceptible *dooshyas*).

There are numerous Ayurvedic formulations with proven efficacy in managing symptoms such as numbness, tingling, burning sensation, and pain, which are commonly observed in diabetic neuropathy. Successful management often hinges on accurately assessing the underlying pathological factors (*samprapti ghatakas*) and tailoring treatment accordingly.

In the present case, a detailed analysis of the *samprapti ghatakas* was conducted, and the treatment plan was formulated based on these insights, ensuring a targeted and holistic approach to address the root causes and symptoms effectively.

#### Case report

A 52-year-old male presented to the OPD of Government Ayurveda College on 04/01/2023, with complaints of a burning sensation in the soles for 11 months, lack of enthusiasm, and dryness of the mouth for 7 months. He had been diagnosed with type 2 diabetes mellitus (T2DM) 2 years ago and was under allopathic medication for its management. Despite achieving adequate blood sugar control with these medications, he experienced no relief from the burning sensation. On consulting his physician, he was diagnosed with diabetic neuropathy. Seeking relief from his symptoms, he opted for Ayurvedic treatment.

#### Clinical examination findings

##### Vital data

- Blood pressure : 136/90 mm of Hg
- Pulse rate : 74 /minute
- Respiratory rate: 16/minute
- Height: 170 cm
- Weight: 82 kg

- BMI: 28.37
- Waist circumference: 102 cm

##### General examination

Consciousness - Alert  
Posture - Normal  
Nutritional status - Overweight  
Pallor - Absent  
Icterus - Absent  
Cyanosis - Absent  
Clubbing - Absent  
Lymphadenopathy - Absent  
Oedema - Absent

##### Neurologic examination

**Mental status** - Intact

**Cranial nerves** - Intact

**Motor system** - Muscle power and muscle tone intact bilaterally

**Reflexes** - Normal bilaterally

##### **Sensory system**

**Light Touch, Pain (Pinprick), Temperature, and**

##### Vibration Sensation:

- Normal sensation to light touch, pinprick, temperature, and vibration over both upper and lower limbs.

- No loss or decrease in sensation, and patient reports normal perception of stimuli bilaterally.

##### Proprioception:

- Intact proprioception with normal perception of joint position in both upper and lower extremities.

##### Two-Point Discrimination:

- Normal two-point discrimination in both upper and lower extremities.

**No sensory abnormalities noted in the distal extremities.**

##### **Peripheral pulses**

Dorsalis pedis and posterior tibial pulse - feeble bilaterally

##### Diagnostic investigations done

FBS - 136 mg/dL

PPBS - 189 mg/dL

HbA1C - 8.2 %

Total cholesterol - 240 mg/dL

Triglyceride - 180 mg/dL

LDL - 140 mg/dL

HDL - 42 mg/dL

VLDL - 36 mg/dL

Hb - 13.8 g/dL

ESR - 7 mm/hour

TSH -0.6 µIU/mL

T4 - 1.2 ng/dL

T3 - 3.3 pg/mL

Vitamin B12 - 412 pg/mL

##### Ayurvedic parameters

**Ashtasthana Pareeksha**

*Nadi* - *Sadharanam*

*Mutram*- *Anavila*

*Malam*- *Prakritam*

*Jihwa*- *Anupalipta*

*Shabda* - *Spashta*

*Sparsha* - *Anushnaseeta*

*Drik* - *Sadharanam*

*Akriti* - *Madhyama*

##### **Diagnosis**

The patient was diagnosed with diabetic peripheral neuropathy by his allopathic physician, following a 2-year history of diabetes mellitus and based on his clinical symptoms. In Ayurveda, the presenting complaint of burning sensation is referred to as *daha*, a hallmark of *pitha* vitiating and considered a *pithaja nanatmaja vikara*.

Diabetes mellitus is conceptually aligned with *Prameha* in Ayurveda. The *purvarupa* (prodromal symptoms) of *Prameha* include symptoms such as *karapada daha* (burning sensation in the hands and feet), which closely

resemble the patient's complaint of burning soles. The *rupa* (complete manifestation) of the disease follows the appearance of *purvarupa*. Furthermore, *daha* is explicitly described under the category of *pithaja prameha upadrava* (complications of *pitha*-type *prameha*). Based on the predominance of the *pitha dosha* reflected in the patient's symptomatology, particularly the burning sensation, this case can be diagnosed as *prameha upadrava* with a clear *pitha* predominance.

#### Treatment protocol

When providing treatment for *prameha upadrava*, it is crucial to address not only the *upadrava* (complication) but also the main disease. Therefore, the treatment should focus on management *prameha*, while also considering the *pitha*-predominant nature of the *upadrava*, in this case, the burning sensation. In this context, it is essential to recognize the underlying *avarana* (obstruction) pathology. Specifically, in

conditions like *pithavrita vatha* (*vatha* obstructed by *pitha*) and *rakthavrita vatha*, where *daha* is a predominant symptom. *Avarana* pathology play a crucial role in *madhumeha* which is usually correlated as type 2 diabetes mellitus.

Additionally, in Ayurveda, *Padadaha* is described as a distinct condition, in which vitiated *vatha*, along with *pitha* and *raktha*, causes a burning sensation in the legs. Thus, by considering all these factors, the treatment approach should aim at balancing the *doshas*, primarily *pitha*, while simultaneously resolving the *avarana* pathology, especially focusing on the *vatha* and *raktha* involvement, to alleviate the burning sensation and manage the primary condition of *Prameha* effectively. Thus the treatment plan was made and the patient was given treatment in the IP level. The table no:1 shows the internal medications and panchakarma therapies given to the patient.

Table no:1 - Medicines and treatment given

Date	Complaints	Internal medicines	Kriyakrama	remarks
04/01/23 - 10/01/23	Dryness of mouth, lack of enthusiasm and burning sensation in both soles	- Mahamanjishtadi kashayam 90 ml twice daily, 6 am & 6 pm - Kaisora guggulu, 1-0-1 with Mahamanjishtadi kashayam - Nishakatakadi kashayam 90 ml twice daily, 11am & 3 pm	-	
11/01/23 - 18/02/23		Medicines repeated	- Udwarthana with Padmakadi gana choornam for 7 days	
19/01/23 - 25/01/23		- Nishakatakadi kashayam 90 ml twice daily, 6 am & 6 pm - Kaisora guggulu 1-0-1 with Nishakatakadi kashayam - Ksheerabala 7 avarti, 10 drops with milk at night	- Dashamoola kseera dhara for 7 days	Mild relief of burning sensation noted
01/2/23 - 08/2/23		- Repeated	Abhyanga with Pinda tailam	- Dryness of mouth and lack of enthusiasm improved a lot
09/02/23 - 13/2/23		Repeated	Pizhichil with Mahanarayana tailam for 5 days	
14/2/23- 18/2/23		Repeated	Ksheeravasthi for 5 days	- Burning sensation in the soles reduced to a great extend

#### Follow up and outcome

The patient's primary complaint of burning sensation in both soles showed significant improvement by the time of discharge. Additionally, other symptoms, including dryness of the mouth and lack of enthusiasm, were completely resolved, and the patient's overall health had improved. At the time of discharge, the blood sugar profile was nearly normal, with Fasting Blood Sugar (FBS) of 120 mg/dL and Postprandial Blood Sugar (PPBS) of 147 mg/dL.

Upon discharge, the patient was prescribed *Siva gulika* 0-0-1 after food, and *Abhraka bhasma* as a *rasayana* to continue for 1 month, with a dosage of 1 pinch mixed with pure honey, taken twice daily.

The patient was followed up a month later, on 21/03/23, and at this time, the patient reported being completely free of the burning sensation, further demonstrating the effectiveness of the treatment.

#### DISCUSSION

In the present case, apart from symptoms like dryness of mouth and lack of enthusiasm, the only presenting feature

was a burning sensation in both soles, which was diagnosed as diabetic neuropathy. The presentation of diabetic neuropathy can vary significantly from person to person, influenced by multiple factors. Genetic and physiological factors play a key role; some individuals may have a genetic predisposition or specific physiological traits that make them more susceptible to certain forms of neuropathy, such as sensory neuropathy, while sparing other types. The body's unique response to chronic hyperglycaemia can manifest in different ways, with some individuals experiencing isolated burning sensations as a primary symptom. Additionally, lifestyle factors such as diet, physical activity, and stress can impact the severity of neuropathic symptoms.

The occurrence of a burning sensation as a symptom in diabetic patients can be explained by several factors related to diabetic neuropathy. Chronic hyperglycaemia leads to microvascular damage, reducing blood flow and oxygen to nerves, which can cause nerve degeneration and dysfunction, particularly affecting small sensory fibres responsible for pain and temperature sensations. This damage can result in small fibre neuropathy, where

only burning sensations are felt, without other neurological symptoms like numbness or weakness. Additionally, oxidative stress and inflammation caused by high blood sugar levels generate free radicals, further damaging nerve fibres and triggering pain pathways. Abnormal nerve firing may also occur, causing inappropriate signalling that results in burning sensations. Furthermore, impaired temperature regulation due to autonomic dysfunction and vascular insufficiency in the feet can contribute to the burning sensation. The feet are particularly vulnerable due to their high concentration of pain receptors, making them more susceptible to the effects of neuropathy. These combined factors may lead to the isolated symptom of burning in the absence of other signs of neuropathy.<sup>7</sup>

The treatment protocol selected and implemented for this patient was based on a thorough understanding of the *doshic* imbalances and the affected *dooshyas*. The primary symptom of burning soles, along with associated signs like dryness of the mouth and lack of enthusiasm, indicated an imbalance of both *vatha* and *pitha doshas*. Therefore, the treatment focused primarily on *Vatha-Pitha* pacification. Additionally, the need for addressing *Prameha*, as the underlying condition, was considered crucial, as the complications could only be alleviated once the root cause, the primary disease, was effectively managed.

The internal medications given initially included *Mahamanjishtadi kashayam*, *Kaisora guggulu*, and *Nishakatakadi kashayam*.

The drugs in *Mahamanjishtadi kashayam* predominantly exhibit the *tikta* (bitter) *rasa* and have a *seetha veerya* (cooling potency). It possesses properties such as balancing *pitha dosha* and *tvak prasadanam*.<sup>8, 9</sup> *Mahamanjishtadi kashayam* is indicated in conditions like *Vatharaktha*, where the pathology shows similarities to the presentation of *prameha upadrava*—especially when *daha* (burning sensation) is a prominent feature. It is particularly beneficial in conditions where *pitha* and *raktha* predominance is observed, as it helps balance the excess *pitha* and alleviates symptoms related to *daha* and *paka*.

*Kaisora guggulu* is primarily characterized by *thikta rasa*, which pacifies *pitha dosha* and enhances *agni* (digestive fire), aiding in *ama pachana*. Its *thikta* and *kashaya rasas* reduce *kleda* in *rakta*, *kapha*, and *ama*, supporting detoxification. With *lekhana* and *shoshana* properties, it clears *srothorodha*. The formulation is *laghu* and *ruksha*, promoting *tridosha*hara, *rakta shodhaka*, and *rasayana* effects. It also treats *prameha* and *prameha pidaka* and supports overall health. It can be beneficial in managing diabetic neuropathy due to its strong anti-inflammatory and antioxidant properties, which help to alleviate pain and reduce inflammation in nerves affected by diabetes. Additionally, it balances *vatha* and *pitha doshas*, addressing common symptoms of diabetic neuropathy such as numbness, tingling, and burning sensations.<sup>10, 11</sup>

*Nishakatakadi kashayam* given to the patient exhibits *kapha-pitha samana* properties along with *medohara* and *lekhana* effects. These qualities make it very effective in *prameha* and its associated *upadravas*.<sup>12, 13</sup>

Later *Ksheerabala 7 avarti* was given to the patient. *Ksheerabala taila*, described in *Ashtanga hridaya* under *Vataraktha chikitsa*, possesses *Vatha-pitha samana* (balancing of *vatha* and *pitha doshas*) and *brimhana* (nourishing) properties. These qualities make it highly effective in strengthening and nourishing the nerves, which is particularly beneficial in managing diabetic neuropathy.<sup>14</sup>

As part of the panchakarma treatment, the patient was initially administered *Udwarthana* with *Padmakadi gana choorna*. *Udwarthana* is well-known for its effectiveness in managing *Prameha* and its associated conditions. The *Padmakadi gana* is recognized for its *Vatha-Pitha Samana* (balancing of *vatha* and *pitha doshas*) properties, making

it particularly beneficial in addressing the burning sensation often seen in diabetic neuropathy.<sup>15, 16</sup>

*Dashamoola Ksheerapaka* is *vathanulomaka*, *balya*, *shophahara*, and *shoolahara*. These properties make it particularly effective in managing neurological disorders, supporting nerve function, reducing inflammation, and alleviating pain.

*Dashamoola ksheera dhara* is indicated in the treatment of *vathasonita*. Since burning neuropathy in diabetes mellitus shares similarities in pathology with *vathasonita*, *dashamoola ksheera dhara* can yield significant results in managing diabetic neuropathy. The therapy helps to balance *vatha*, alleviate pain, reduce inflammation, and nourish the nerves, making it highly effective in addressing the burning sensation and other neuropathic symptoms associated with diabetes mellitus.<sup>17</sup>

*Abhyanga* was given using *Pinda taila*. It is described in the context of *vathashonita* treatment, possesses *seetha veerya* (cooling potency) and *pitha-vatha hara* properties. It is also *rujaharam* (pain-relieving), *dahaharam* (alleviating burning sensations) and *srotho sodhanam*. These qualities make it highly effective in managing diabetic neuropathy by soothing inflammation, reducing pain, and addressing the burning sensations commonly associated with the condition.<sup>18</sup>

*Ksheeravasthi* administered here is *thiktaka ksheera vasthi*. The medicines used for *vasthi* include honey - 100ml, *saindhava* - 12 gm, *thiktaka gritha* - 100 ml, *guluchi kalka* - 40 gm, and *dashamoola kwatha* - 300 ml. This *vasthi* was given for 5 days. This *vasthi* is having *pitha samana* property and thus helps to alleviate burning sensation in diabetic neuropathy.<sup>19</sup>

At the time of discharge, the patient was prescribed *Abhraka bhasma* and *Siva gulika* as *rasayana* (rejuvenative therapy). *Abhraka bhasma*, renowned for its *vatha-pitha hara* properties and *seetha veerya* (cooling potency), acts as a potent nervine tonic that strengthens and revitalizes tissues, supporting the healing and regeneration of damaged nervous tissue. Additionally, it helps alleviate pain and offers versatile therapeutic benefits. Its efficacy is particularly notable in managing nerve degeneration and chronic conditions, making it invaluable in the treatment of multiple disorders.<sup>20</sup>

*Siva gulika* is also well-known medication highly effective in managing *Prameha* and its associated complications and having rejuvenation property.<sup>21</sup>

## CONCLUSION

The Ayurvedic management of diabetic neuropathy in this case report, involving the administration of *Mahamanjishtadi kashaya*, *Kaisora guggulu*, *Nishakatakadi kashaya*, and *Ksheerabala 7 avarti*, along with carefully planned *Panchakarma* therapies, demonstrated significant clinical improvements. The combination of internal medications and therapies aimed to address the underlying *dosha* and *dooshya* imbalances while alleviating symptoms.

*Panchakarma* interventions, including *Udwarthana*, *Dashamoolaksheera dhara*, *Abhyanga*, *Pizhichil*, and *Ksheeravasthi*, provided systemic detoxification, improved circulation, and pacified aggravated *doshas*, thereby contributing to the resolution of neuropathic symptoms such as burning soles, and other complaints like dryness of the mouth, and lack of enthusiasm. Internal medications supported these interventions by enhancing tissue nourishment, reducing inflammation, and restoring the balance of vitiated *doshas*.

This case highlights the efficacy of a holistic and integrative Ayurvedic approach in managing diabetic neuropathy. The personalized treatment protocol not only alleviated symptoms but also improved the patient's overall quality of life, emphasizing the potential of Ayurveda as a comprehensive system for addressing chronic and complex conditions like diabetic neuropathy.

**Declaration by the patient**

The patient shared that the symptoms were greatly impacting his daily life. After undergoing Ayurvedic treatment, he experienced significant improvement, with his blood sugar levels stabilizing. He felt much better overall and expressed his gratitude for the Ayurvedic care he received.

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#### Conflict of interest

The authors declare no conflicts of interest associated with this study.

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