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Case Study

MANAGEMENT OF DIABETIC PERIPHERAL NEUROPATHY THROUGH *PANCHAKARMA*

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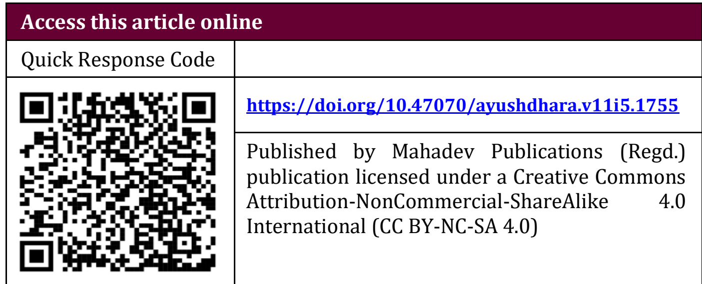
ABSTRACT

Diabetic peripheral neuropathy (DPN) is a prevalent complication of diabetes mellitus, particularly among individuals with prolonged diabetes. Affecting nearly 50% of diabetic patients, DPN leads to considerable morbidity. It primarily presents as burning, tingling, and numbness in the extremities due to chronic hyperglycemia-induced nerve damage. In Ayurveda, diabetic peripheral neuropathy (DPN) is recognized as a complication (*Upadrava*) associated with *Madhumeha* (Diabetes Mellitus) as it manifests as a secondary condition stemming from prolonged and uncontrolled diabetes. A 52-year-old female patient diagnosed with type 1 diabetes mellitus and exhibiting symptoms of DPN- such as burning sensations, tingling, and numbness in the extremities- underwent a comprehensive Ayurvedic treatment regimen including *Abhyanga, Takra dhara, Virechana* and *Basti.* The integrative therapeutic approach led to a notable alleviation of her symptoms and a substantial enhancement in her overall quality of life. This outcome underscores the potential efficacy of combining traditional Ayurvedic treatments with conventional care in the management of diabetic peripheral neuropathy.

INTRODUCTION

Diabetic neuropathy affects approximately 50% of individuals with long-standing type 1 and type 2 diabetes mellitus. The most prevalent form of diabetic neuropathy is Distal Symmetric Polyneuropathy (DSPN), which typically manifests with distal sensory loss and pain. Symptoms often include numbness, tingling, sharpness, or burning sensations that start in the feet and progressively move proximally[1]. Studies across India report a prevalence of peripheral neuropathy in diabetic patients ranging from 10.5% to 32.2%, while Western literature suggests that up to 50% of patients may eventually develop neuropathy over the course of their disease [2]. The pathophysiology of diabetic peripheral neuropathy (DPN) involves complex mechanisms such as oxidative stress, the accumulation of advanced glycation end products (AGEs), vascular insufficiency, and inflammation, all contributing to the progressive deterioration of nerve function[3]. DPN significantly impacts quality of life by causing disabilities such as foot ulcers and gait disturbances, and it substantially increases the cost of diabetic care. The absence of effective treatments in conventional medicine leads to ongoing disease progression, which can result in neuropathic deformities and non-traumatic amputations[4]. DPN is classified under the broader category of *Madhumeha janya upadrava*, indicating that it develops as a secondary complication of diabetes mellitus. Effective management of DPN should involve a dual approach that addresses both the underlying disease, *Madhumeha,* and its associated complications.



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Case Report

The patient is a 52-year-old female with a known history of Type 1 diabetes mellitus, diagnosed at the age of 12, and hypothyroidism, managed for the past 8 years. She reports experiencing burning, tingling, and numbness in her bilateral lower extremities for the past year. These symptoms began insidiously and have gradually progressed over time. The burning sensation is most pronounced in her feet and lower legs. It is present throughout the day but

worsens at night, occasionally disturbing her sleep. The tingling sensation is also noted in her hands, although less frequently than in her feet. Numbness in the toes and fingertips has become more apparent over the past few months, sometimes causing her to drop objects. She denies any recent trauma or injury to the affected areas. There is no history of rash, muscle weakness, or loss of balance. For further evaluation and management of her condition, she has been admitted to our hospital.

Past History

K/C/O Type 1 DM, on Insulin 10U-0-8U

K/C/O Hypothyroidism since 8 years and is on thyronorm 25mcg 1-0-0 B/F

Menstrual History

Menopause- 5 years ago

Family History

No H/O Consanguineous parentage

Mother is a K/C/O type 2 DM

Personal History: Shown in table no. 01

Table 1: Personal History

Ahara	Vegetarian diet
Rasa pradhana	*Sarva rasa*
Vihara	Does *Yoga* at morning and a walk at evening for ½ hour
Vyasana	None
Agni	*Mandagni*
Kostha	*Madhyama*
Nidra	Disturbed
Emotional status	Normal

Rogi Pareeksha

Table 2: General Examination

General appearance: Healthy	Pallor – Absent
Built: Moderate	Icterus – Absent
Height: 5.1 feet	Cyanosis – Absent
Weight: 52 kg	Clubbing – Absent
Pulse rate: 74bpm	Lymphedenopathy – Absent
Blood pressure: 110/80 mm of Hg	Edema – Absent
BMI- 21.6 kg/m^2	

Table 3: *Asta Sthana Pareeksha*

Nadi - 72 Bpm	*Shabda - Prakrita*
Mutra - 5-6 times at day, 1-2 times at night	*Sparsha - Prakrita*
Mala - Feeling of incomplete evacuation, once a day	*Drik - Prakrita*
Jihwa - Lipta	*Akriti - Krisha*

Table 4: *Dasha Vidha Pareeksha*

Prakruti- Kapha vata	*Ahara shakti - Abhyavarana-Madhyama* *Jarana- Avara*
Vikruti – Vata pradhana tridosha	*Vyayama shakti- Madhyama*
Sara – Madhyama	*Pramana- Madhyama*
Samhanana – Madhyama	*Vaya – Madhyama*
Satva- Madhyama	
Satmya - Sarva rasa satmya	

Nidana Panchaka

Nidana: Beejadushti

Poorvaroopa: Nothing specific

Roopa: Prabhuta mootrata, weight loss

Upadrava: Karapada supti, Daha

Upashaya-Anupashaya: None

Samprapti Ghataka: Shown in table no. 05

Table 5: *Samprapti Ghataka*

Dosha: Vata pradhana tridosha	*Sanchara sthana: Sarva shareera*
Dushya: Rasa, Rakta, Mamsa, Meda, Majja, Shukra	*Vyakta sthana: Kara pada*
Agni: Jataragni and *Dhatvagni*	*Roga marga: Abhyantara, Bahya*
Ama: Jataragni, Dhatvagni mandyajanya	*Swabhava: Chirakari*
Udbhava sthana: Pakwashaya	*Sadhyasadhyata: Asadhya*

Table 6: Systemic Examination

Gait		Normal		
Higher mental function		Intact, well oriented to time, place and person		
Cranial nerves		Within normal limits		
Sensory system		No abnormality detected		
Motor system	Limb attitude	NAD		
	Muscle power		Right	Left
		Upper limb	5/5	5/5
		Lower limb	5/5	5/5
	Reflexes	Biceps	++	++
		Triceps	++	++
		Knee	++	++
		Ankle	++	++
		Plantar	Flexor	Flexor
	Muscle tone		Normotonic	Normotonic
	Muscle bulk		Normal	Normal
	Co-ordination		Intact	Intact

Table 7: Treatment Protocol Adopted

1	*Deepana Pachana - Bhoonimbadi choorna* *Sarvanga abhyanga* with *Pinda taila* and *Sarvanga musta- Amalaki siddha takra dhara*	7 days	04/12/23-10/12/23
2	*Snehapana* with *Moorchita tila taila* *Virechana* *Samsarjana krama*	13 days	11/12/23-23/12/23
3	*Asanadi Madhutailika basti*	10 days	24/12/23- 2/01/24

Table 8: *Shamanoushadha*

Chandraprabha vati 1-1-1 A/F
Nishamalaki choorna- ½ tsp- 0- ½ tsp B/F
Nimbamrutadi eranda taila 0-0-10 ml A/F

Virechana

Poorvakarma

Snehapana with *Moorchita tila taila* in *Arohana matra* for 4 days

Table 9: *Arohana Snehapana*

	Dose	Time of intake	*Kshut Pravritti*
Day 1	30 ml	6.10 AM	11.00 AM
Day 2	70 ml	6.15 AM	1.30 PM
Day 3	120 ml	6.15 AM	4.00 PM
Day 4	150 ml	6.15 AM	6.00 PM

Sarvanga Abhyanga with *Pinda taila* f/b *Ushna jala snana* for 3 days

Pradhana karma

- *Virechana* with *Trivrit avaleha*- 50 gms

Table 10: *Virechana Samyak Yoga*

Vaigiki	*16 Vegas*
Antiki	*Kaphanta*
Laingiki	*Samyak Virechana lakshanas*

Paschat karma

Peyadi Samsarjana krama for 5 days

Asanadi Madhutailika Basti

Table 11: Contents of *Madhutailika Basti*

Makshika	80 ml
Saindhava	10 gm
Moorchita tila taila	80 ml
Shatapushpa	30 gm
Asanadi Kashaya	250 ml
Anuvasana basti with *Moorchita tila taila*	60 ml

Modified *Basti* pattern

Table 12: Modified *Basti* Pattern

Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10
	NB	NB	NB	NB	NB	NB			
AB	AB	AB	AB	AB	AB	AB	AB	AB	AB

Assessment

Diabetic neuropathy symptom score- Shown in table no. 13

Table 13: Diabetic Neuropathy Symptom Score

Symptoms	Before treatment	After treatment	
Unsteadiness on walking	0	0	0= Absent 1= Present
Numbness	1	0	
Burning and aching pain	1	1 (Reduced)	
Pricking sensation	1	0	

Table 14: HbA1c Results

Before treatment	7.9 %
After treatment	6.4%

OBSERVATION AND RESULTS

Table 15: Observation and Results

Days	Treatment	Observation
04/12/23-10/12/23	*Sarvanga abhyanga* with *Pinda taila* and *Sarvanga takradhara*	• Patient developed rhinitis on 2nd day which was managed symptomatically. • Burning sensation reduced by 20%
11/12/23-23/12/23	*Virechana*	Burning sensation, numbness and pricking sensation reduced by 50% Sound sleep
24/12/23-2/01/24	*Asanadi Madhutailika basti*	Burning sensation reduced by 80% Numbness and pricking sensation reduced completely

DISCUSSION

Diabetic peripheral neuropathy (DPN) is primarily caused by chronic hyperglycemia, which leads to multiple damaging processes: Persistent high blood glucose levels result in the formation of advanced glycation end products (AGEs) and excessive sorbitol via the polyol pathway, both of which cause direct nerve damage. This chronic hyperglycemia also increases oxidative stress by boosting the production of reactive oxygen species (ROS), which further injure nerve cells. Additionally, diabetes-induced damage to blood vessels reduces blood flow to peripheral nerves, causing ischemia and exacerbating nerve damage. Inflammation, triggered by prolonged hyperglycemia, contributes further to nerve injury through the release of inflammatory cytokines and mediators. Finally, the impaired repair mechanisms in diabetic nerves prevent effective recovery from damage, leading to sustained and progressive neuropathy. These combined effects manifest as the sensory disturbances characteristic of DPN, including burning, tingling, and numbness in the extremities.[5]

Diabetic peripheral neuropathy (DPN) can be regarded as an *Upadrava* of *Madhumeha* due to *Vyadhi karshana*, as *Prameha* is classified as an *Anushangi vyadhi*[6]. The condition is characterized by a significant depletion of *Soumya dhatu* through the urine, leading to a predominance of *Vata* and *Pitta doshas* [7]. Given the symptoms of burning, tingling, and numbness, DPN aligns with the *Vata-pitta* predominant stage of *Madhumeha.* Because this *Upadrava* significantly impairs the patient's quality of life, it requires independent management. Therefore, the treatment approach should incorporate both *Lakshanika chikitsa* and *Samprapti vighatana.*

Deepana pachana serves as a *Poorvakarma* in *Shodhana* aimed at digesting *Ama,* facilitating the separation of *Doshas* from *Dhatus*, and enhancing *Agni* [8]. Given the involvement of *Pitta dosha* in the condition, *Tikta pachana* is indicated, for which *Bhoonimbadi choorna* is utilized.[9]

Sarvanga abhyanga addresses symptoms such as tingling and numbness, which are primarily attributed to *Vata dosha. Abhyanga* is known for its *Vata*-pacifying effects [10]. *Pinda taila* is employed for *Abhyanga*, and since the herbs used in this oil are *Pittahara,* it aids in alleviating symptoms like burning sensations[11].

Sarvanga takra dhara is utilized as a *Poorvakarma* to *Shodhana* in *Madhumeha*, as it is a *Kleda pradhana vyadhi* and *Rookshana* is indicated prior to *Shodhana*. In managing *Madhumeha, Sheeta* and *Tikta pachana* are preferred, as *Katu* and *Ushna pachakas* can increase the *Dravata* of *Kapha,* potentially aggravating the disease. Therefore, *Musta* and *Amalaki siddha takra* is employed, with *Musta* providing *Tikta pachana* [12] and *Amalaki* offering *Sheeta virya*[13]. Additionally, in the context of *Madhumeha samprapti*, where there is a loss of *Ojas* through urine [14], *Takra dhara* is indicated to address *Ojo kshaya*[15]. *Takra dhara* is also a form of *Parisheka sweda* which is recommended for conditions where *Pitta* is associated with *Vata*[16].

Virechana was planned as part of the *Samprapti Vighatana*, given that the patient primarily exhibited symptoms related to *Vata* and *Pitta doshas*[16], such as tingling, numbness and burning sensation. This *Virechana* aims to eliminate *Doshas* and address the root cause of the condition.

For *Snehapana, Moorchita tila taila* was selected, as *Tailapana* is indicated for diseases primarily characterized by *Kapha* and *Medas*, such as *Prameha*[17]. *Tila taila* is known for its *Vata-kaphahara* properties, as well as its *Vyavayi* and *Sukshma* qualities [18], which aid in the removal of *Doshas*. *Snehapana* was stopped after observing *Adhastat sneha darshana* and not continued until observing *Twak snigdhata* as it is said as "*Natisnigdhan vishodhayet*" in context of *Prameha.*

Sarvanga abhyanga with *Pinda taila*, combined with *Ushna jala snana*, was employed to facilitate the movement of *Doshas* from *Shakha* to *Kosta* [19].

Trivrit was chosen as the primary drug for *Virechana*, as it is considered the most effective and *Sukhavirechaka* for all individuals [20].

Asanadi Madhutailika basti is recommended for *Prameha*, with *Santarpana* planned after an initial *shodhana* to prevent the disease from worsening and causing further *Dhatukshaya*[21]. Since *Vata* plays a significant role in both *Madhumeha* and DPN, *Basti* is particularly effective for balancing *Vata dosha*[22]. Therefore, *Madhutailika basti*, which is both *yapana* and *Brimhana*, has been chosen [23].

Asanadi gana is especially suited for *Prameha* due to its anti-diabetic properties[24]. The herbs in this formulation possess *Tikta rasa* and *Sheeta virya*, which help in eliminating *Dusta kapha* and *Meda doshas* [25]. *Madhutailika basti* thus addresses both *Dusta dosha nirharana* and provides *Yapana/Brimhana* effects, offering a comprehensive therapeutic approach.

CONCLUSION

Madhumeha is considered one of the *Asta mahagada* and is known to localize in *Basti*. *Sahaja prameha*, due to *Beejadosha*, is considered incurable. Therefore, treatment should focus on preventing further *Dhatukshya* and improving the patient's quality of life. In this case, symptoms of DPN, such as burning, numbness, and tingling, were effectively managed through *Takra dhara, Virechana, basti*, and *Shamana chikitsa.* After the treatment, there was a significant improvement in her symptoms, and the insulin dose was reduced by 2 units. Ayurvedic management of DPN aims not only at alleviating symptoms but also at addressing the root causes of the disease through therapeutic procedures like *Panchakarma*, including *Takra dhara, Virechana*, and *Basti.* This case illustrates the potential of Ayurveda as a complementary approach in managing chronic conditions like DPN, especially when integrated with conventional medical care.

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