



Case Study

REVITALIZING NERVES: PANCHAKARMA THERAPY FOR DIABETIC NEUROPATHY

Sowjanya B R^{1*}, Shaila Borannavar²

*1PG Scholar, ²Professor, Department of Panchakarma, Government Ayurveda Medical College, Bengaluru, Karnataka, India.

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ABSTRACT

Diabetic Peripheral Neuropathy (DPN) is one of the most common and debilitating complications of diabetes, affecting the peripheral nervous system resulting from prolonged elevated blood sugar levels. In Ayurveda, diabetes mellitus closely resembles a disorder called *Madhumeha*. In *Avaranajanya Madhumeha*- vitiated *Kapha*, *Pitta* and *Meda* causes *Avarana* to *Vata* that affects the vital *Dhatu*s. This may lead to the complication of *Madhumeha* as that of diabetic neuropathy. A 44-year-old female patient diagnosed with type 2 diabetes mellitus and exhibiting symptoms of DPN-such as numbness, reduced sensation and weakness in the extremities- treated with a combination of Ayurvedic oral medication and external therapies. Considering the treatment protocol of *Prameha upadrava* and *Vatavyadhi chikitsa*, internally, *Ksheerabala* 101 Capsule, and *Avipattikara churna* were used during the course of treatment. External therapies including *Udwartana*, *Abhyanga* and *Masha upanaha* were done for a duration of 14 days. Ayurveda's integrative approach addresses both the root cause and symptoms of DPN, offering a natural and sustainable alternative for managing diabetic complications. This outcome emphasizes the potential efficacy of combining traditional Ayurvedic treatments with conventional care in the management of diabetic peripheral neuropathy.

INTRODUCTION


India has one of the highest numbers of diabetic patients in the world. According to the International Diabetes Federation^[1] and various studies, over 77 million adults in India are living with diabetes, making it the second-largest diabetic population globally. One of the most common complications of diabetes is Diabetic peripheral neuropathy (DPN), a type of nerve damage that occurs due to prolonged high blood sugar levels^[2]. The pathophysiology of DPN involves complex mechanisms such as oxidative stress, the accumulation of advanced glycation end products, vascular insufficiency, and inflammation, all contributing to the progressive deterioration of nerve function^[3]. Patients with DPN often present with varying degrees of numbness,

tingling, and aching, burning sensation, weakness of limbs, hyperalgesia, allodynia, and pain. This pain has been characterized as superficial, deep-seated, or severe, unremitting pain with exacerbation at night. DPN can lead to significant complications ranging from paraesthesia to loss of limb and life^[4].

The symptomatology corresponding to the clinical presentation of DPN is scattered in *Purvarupa*, *Lakshana* and *Upadrava* of *Prameha*, and *Vatavyadhi*^[5]. According to Ayurvedic principles the symptoms like *Suptata* (numbness) in body parts especially in hands and feet are described under *Purvarupa* of *Prameha* and *Harsha*^[6] (altered sensorium) under *Padaharsha* (*Vatavyadhi*). This article highlights the potential of Ayurveda in the management of sensory and motor symptoms of DPN in a case where satisfactory treatment modalities are available in conventional medical system.

Case Report

A female patient of 44 years, diagnosed with Atrial septal defect (ASD), hypothyroidism and hypertension at the age of 19 years, after her 2nd caesarean section, noticed gradual onset of tingling

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pain in her lower back radiating to bilateral lower limbs associated with occasional numbness, pain was manageable with medications. In 2010, she underwent Catheter based repair surgery, and diagnosed with diabetes mellitus. In postsurgical period she consumed excessive of meat, meat soup and sweets. 2 years later she noticed gradual weakness of bilateral lower limb which affected her walking and sudden onset of complete loss of sensation to touch, pain and temperature in bilateral lower limb below knee up to toes. In mean time she also noticed gradual increase in weight of 40kg in 10 years. As she could walk with support only, she visited SJGAUH hospital for further management

Past History

K/C/O hypothyroidism since 18 years
K/C/O hypertension since 18 years
K/C/O Type 2 diabetes mellitus since 8 years

Medical History

Tab. Ecosprin 150 mg 0-0-1 AF
Tab. Atorvastatin 20 mg 0-1-0 AF
Tab. Telma 40 mg 1-0-1 AF
Tab. Thyroxine 100 mcg 1-0-0 BF
Tab. Pregabalin 75 mg 1-0-0 BF
Tab. Voglib 0.2 mg 1-0-1 BF
Tab. Diavoron 500 mg 1-0-1 BF
Lispro biphasic injection 25mg-0-20mg

Surgical history

H/O catheter based repair - 10 years ago

Family history

Nothing specific

Personal history: Shown in table no.1

Table 1: Showing subject's personal history

Name: xyz	Bowel: Hard, daily once
Age: 44 years	Appetite: Good
Marital status: Married	Habits: Nothing specific
Occupation: Home maker	Height: 150cm
Diet: Mixed	Weight: 92kg

Table 2: Showing Ashta sthana pareeksha

<i>Nadi</i>	<i>Vataja</i> , 110bpm
<i>Mutra</i>	5-6 times/day, 2-3 times at night, occasionally associated with itching, burning sensation
<i>Mala</i>	<i>Krura koshta</i> 1 time/day
<i>Jihwa</i>	<i>Alpa lipta</i>
<i>Shabda</i>	<i>Prakruta</i>
<i>Sparsha</i>	<i>Sparshanaasha</i> in B/L lower limb
<i>Drik</i>	<i>Prakruta</i>
<i>Akriti</i>	<i>Sthoola</i> (BMI - 43.41kg/m ²)

Table 3: Showing Dashavidha pareeksha

<i>Prakriti: Kapha-pitta</i>	<i>Satmya: Sarvarasa satmya</i>
<i>Vikriti: Tridosha, Rasa, Rakta, Mamsa, Asthi</i>	<i>Ahara shakti: Madhyama</i>
<i>Sara: Madhyama</i>	<i>Vyayama shakti: Madhyama</i>
<i>Samhanana: Madhyama</i>	<i>Vaya: Madhyama</i> (44 years)
<i>Satva: Avara</i>	<i>Pramana: Ht- 150cm Wt- 92kg</i>

Systemic Examination

Cardiovascular system: S1 S2 heard, no abnormality detected
Respiratory system: NVBS heard, no abnormality detected
Gastrointestinal system: P/A- soft, non-tender

Musculoskeletal System

Gait- Low Steppage

Table 4: Showing Spine examination

Inspection	Palpation	Range of movements
Curvature – Scoliosis of Lumbar spine	Tenderness- Present all over the spine	Extension- Restricted
Deformity- Absent	Warmth- absent	Flexion- Restricted
Scar marks- Absent	Doorbell sign- Present all over the spine	Coin-pick test- Positive
Swelling- Absent		

Table 5: Showing specific signs elicited in the patients

Sign	Right	Left
SLR	Positive at 45°	Could not be elicited
Bowstring	Positive	Could not be elicited
Bragard’s	Positive	Could not be elicited
Heel walk	Not possible	Not possible
Toe walk	Not possible	Not possible

Central Nervous System

Higher mental function – Intact

Cranial nerves examination – No abnormalities detected

Table 6: Showing Motor system examination

	Right UL	Left UL	Right LL	Left LL
Muscle power	5/5	5/5	Anterior tibialis- 2/5	Quadriceps-4/5 Hamstring- 4/5 Anterior tibialis- 3/5
Muscle tone	Normotonic	Normotonic	Normotonic	Normotonic
Muscle bulk	No atrophy or hypertrophy	No atrophy or hypertrophy	Wasting of Abductor digiti minimi muscle (foot muscle)	Wasting of Abductor digiti minimi muscle (foot muscle)

Table 7: Showing Sensory system examination

	Right UL	Left UL	Right LL	Left LL
Touch	Intact	Intact	Absent in Plantar and Dorsal aspect of foot	Absent below knee to toes
Pain	Intact	Intact	Slightly reduced	Absent below knee to toes
Temperature	Intact	Intact	Slightly reduced	Absent below knee to toes
Pressure	Intact	Intact	Slightly reduced	Absent below knee to toes
Joint position sense	Intact	Intact	Diminished	Absent below knee to toes

Table 8: Showing Reflexes

Deep tendon reflexes	Right side	Left side
Biceps	++	++
Triceps	++	++
Supinator	++	++
Knee	+	+
Ankle	+	+

Superficial reflexes	Right side	Left side
Plantar	Areflexia	Areflexia
Abdominal	++	++

10 Second step test: 8 steps in 10 seconds (normal=20)

Table 9: Showing *Nidana panchaka*

<i>Nidana</i>	<i>Viprakrista nidana - Prameha, Galaganda</i> <i>Sannikrista nidana - Meat, meat soup, sweets</i>
<i>Purvaroop</i>	<i>Atisweda, Daha, Guru gaatrata, Atimutrata</i>
<i>Roopa</i>	Tingling sensation in whole back with weakness and loss of sensation in bilateral lower limbs below knee
<i>Upashaya</i>	None
<i>Anupashaya</i>	None
<i>Upadrava</i>	<i>Karmakshaya</i> of B/L lower limbs

Table 10: Showing *Samprapti ghataka*

<i>Dosha</i>	<i>Tridosha</i>	<i>Udbhavasthana</i>	<i>Pakvashaya</i>
<i>Dushya</i>	<i>Rasa, Rakta, Mamsa, Asthi</i>	<i>Sancharasthana</i>	<i>Adhokaya</i>
<i>Agni</i>	<i>Jatharagni, Dhatvagni</i>	<i>Vyaktasthana</i>	<i>Adhokaya</i>
<i>Agnidushti</i>	<i>Mandagni</i>	<i>Adhistana</i>	<i>Adhokaya</i>
<i>Srotas</i>	<i>Rasavaha, Raktavaha, Asthivaha, Mamsavaha</i>	<i>Rogamarga</i>	<i>Madhyama</i>
<i>Srotodushti</i>	<i>Sanga</i>	<i>Sadhyasadhyata</i>	<i>Yapya</i>

Table 11: Showing Treatment protocol adopted

Date of procedure	No. of days	Treatment	Results
5-11-23 to 11-11-23	7 days	<i>Sarvanga udwartana - Kolakulathadi Choorna</i> [7]	<ul style="list-style-type: none"> • Patient started feeling lightness of body from the day 1. • Could able to walk for 10 steps in 10 sec from day 3. • On 6th day, she could sense movements of hand in left lower limb. • Pain in lower back radiating to right LL reduced by 30%.
12-11-23 to 18-11-23	7 days	<i>Sthanika Abhyanga</i> with <i>Ksheerabala taila</i> [8]	
12-11-23 to 18-11-23	7 days	<i>Masha upanaha</i> to B/L lower limbs below knee up to ankle joint	<ul style="list-style-type: none"> • On 3rd day, she could able to feel the hotness of <i>Masha upanaha</i> • On 5th day, she felt itching after removal of <i>Upanaha</i>. • On completion of Rx, pain reduced by 50%.

Oral Medicines

Agnitundi Vati[9] 1-1-1 B/F

Ksheerabala 101[10] capsules 1-0-1 A/F

Avipattikara choorna[11] 0-0-1 tsp with milk A/F

Table 12: Showing Assessment criteria

	Before treatment	After treatment
SLR	Right - 45 degree Left - Could not be elicited	Right - 60 degree Left - 45 degree
Gait (10 second step test)	8 steps in 10 seconds	16 steps in 10 seconds

Sensation to touch, pain, temperature	Absent in left lower limbs and right foot	Able to sense touch, pain, temperature in left lower limb below knee up to ankle Absent in left and right foot
Power in B/L foot	2/5 (R), 3/5(L)	3/5 (R), 4/5 (L)
Heel to shin movement	Could not be elicited	Patient was able to perform this movement
Weight	89kg	86kg

Subjective parameters	Before treatment	After treatment
Quality of sleep	Disturbed (due to pain in Lower limb persisted in any of the sleeping posture)	Sound (As pain decreased and subject was able to sleep in any of posture)
Generalised weakness	Feeling of tiredness just for walking about 10 steps	Could able to walk for 30 steps without getting tired
Mental status	Anxious, depressed and had suicidal thoughts	Happy, started to talk with people, positive thoughts in mind

DISCUSSION

Neuropathy is a prevalent complication of diabetes, affecting around 30% of diabetic patients. Diabetic neuropathy is believed to result from microvascular damage to the small blood vessels that supply the nerves, alongside macro vascular conditions that can further contribute to its development. While the advent of insulin and hypoglycaemic agents has significantly benefited diabetic patients, these treatments often fail to fully address the complications associated with neuropathy. In diabetic sensory polyneuropathy, the most common signs include a reduced ability to perceive vibration and a general impairment of various sensory modalities.^[12]

Madhumeha is primarily a *Vata*-dominant disorder, and if left untreated in its early stages, it may lead to various *Vata*-related conditions (*Nanatmaja Vyadhi*) due to the imbalance of *Doshas*. These may manifest as symptoms such as *Harsha* (numbness) and *Suptata* (tingling), resembling the tingling pain and reduced sensation in the extremities commonly seen in diabetic neuropathy, according to modern science. In the present case, since there was *Kaphavarana* (obstruction of *Vata* by *Kapha*) in the disease pathology (*Samprapti*), a treatment approach of *Rooksha* followed by *Snigdha* therapy was employed,

starting with *Udwartana* and followed by *Masha Upanaha* (external treatments).

Udwartana^[13]

- In the pathogenesis of *Prameha*, it is mentioned that due to *Bahu Drava Sleshma* (excess moisture content), the *Sthirata* (compactness) of the muscles of the body is lost^[14].
- As the *Vyadhi* is *Santarpanotta janya* and subject is *Sthoulya* with symptoms like heaviness of body, reduced sensation which indicates the *Avarana Janya Samprapti*
- Here *Kapha* does *Avarana* to *Vata*, to remove *Kaphavarana - Rookshana* becomes prime modality of treatment
- As *Udwartana* is a procedure that decreases *Kapha*, liquefaction of *Medas* imparts *Sthirata* to the body and helps in *Tvak Prasadana*.^[13]
- Hence, the initial treatment approach involved the *udwartana* for duration of 7 days.
- It was done with *Kolakulattadi choorna*^[7] + *Triphala*^[15] + *Haridra choorna* mixed with coarse powder of *Rava* over abdomen, buttocks and upper limbs avoiding chest, foot. In lower limbs, it was done with lesser pressure and for lesser duration due to muscle wasting for 7 consecutive days.

Table 13: Showing *Udwartana Karmukata*^[13]

<i>Kaphahara</i>	<i>Medopravilayana</i>	<i>Siramukha Viviktatva</i>
Helps in <i>Samprapti vighatana</i> by removing <i>Margavarodha</i>	Helps in reduction of weight Feeling of lightness of body	Opens up blocked channels enabling free circulation

Abhyanga^[16]

After the initial *Rookshana* by *Udwartana*, *Abhyanga* should be done with oil which is *Vatahara* and also indicated in *Prameha*^[17]. This process alleviates *Vata* and improves the sensory perception of the skin as *Vayu* dominates the tactile sensory organ located in the skin.

Sthanika abhyanga with *Ksheerabala taila*^[8] was done just before the *Masha upanaha*

Masha upanaha^[18]

Once *Kaphavarana* was removed *Vyadhi* becomes *Kevala vataja*, hence *Brihmana* line of treatment was adopted

- *Masha upanaha* and *Bandhana* to bilateral lower limbs was done for 7 consecutive days.
- It was kept for 4-5 hrs
- As *Masha* is cooked in *Balamoola ksheerapaka* possesses *Guru*, *Snigdha*, *Vatahara guna* and produce *Brihmana* effect^[19].
- It increases effective absorption of active ingredients - flavonoids, niacin, thiamine, and riboflavin.

CONCLUSION

Diabetic neuropathy is a common complication of untreated or poorly controlled diabetes mellitus, characterized by symptoms such as numbness, tingling, altered sensation, and weakness in the lower limbs. In this case, the symptoms closely resemble *Prameha upadrava* and *Padaharsha*, presenting with *Supti* (numbness), *Ruja* (pain), and *Harsha* (altered/reduced sensation). The treatment adopted was *Rooksha poorvaka Snigdha chikitsa* based on the *Dosha* imbalance, *Vyadhi avastha*, and *Samprapti*. The therapy focused on addressing *Kaphavarana* and pacifying aggravated *Vata*. *Udwartana* was employed to remove the *Avarana*, alleviating symptoms like *Guruthva* and *Sparsha agnanathva* by enhancing circulation. This was followed by *Masha upanaha* to locally pacify aggravated *Vata* and provide *Brihmana* effect. In the later stages of the disease, *Shodhana chikitsa*- such as *Vamana*, *Virechana*, or *Basti*- should be administered to tackle the *Samprapti*. As *Madhumeha* and *Vatavyadhi* are challenging to manage and require long-term care, the treatment applied in this case demonstrated significant effectiveness in alleviating symptoms and improving the patient's condition.

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***Address for correspondence**

Dr. Sowjanya B R

PG Scholar,

Department of Panchakarma,
Government Ayurveda Medical
College, Bengaluru.

Email: janusowju28@gmail.com

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