

## ORIGINAL RESEARCH ARTICLE - CASE STUDY

## An Ayurvedic approach in the management of diabetic neuropathy - a case report

\*Dr. Sarvesh Kumar Singh, \*\*Dr. Kshipra Rajoria, \*\*\*Dr. Suman Dadhich

\*Assistant Professor, \*\*Lecturer, \*\*\*M.D. Scholar, Department of Panchakarma, National institute of Ayurveda, Jaipur.

### ABSTRACT

**Introduction-** Diabetic neuropathies are nerve damaging disorders associated with diabetes mellitus. Diabetic neuropathy affects all peripheral nerves including motor neurons, autonomic nervous system and pain fibers. Satisfactory treatment is not available in bio-medicine. Here we present a case which was successfully managed with Ayurvedic medications and Panchakarma interventions. **Material and methods-** A 63 years old female suffering from Diabetic neuropathy was treated with Panchakarma therapy and selected Ayurvedic oral medicines. Vatarakta was the Ayurvedic diagnosis for the case. Ayurvedic treatment was directed to ameliorate the neurological clinical conditions in this case. Panchakarma procedures such as Shalishastika Pinda Swedana for 28 days and Saghrta Panchatikta Pancha Prasriti Basti for 16 days were given. Along with these Panchakarma interventions selected Ayurvedic oral medicine –Madhumehari Churna -5g, Ashwagandha Churna (powder of Withania somnifera Dunal) -500mg, Dashmoola Kwatha -40ml, Kaishore Guggulu-500 mg and Shiva Gutika -500mg were administered twice a day. These oral medicines were continued for next one month. **Result-** Modified neuropathy disability score and grading for neuropathy based on 19 points were assessed for outcome which shows good improvement. Before treatment patient was suffered from moderate peripheral neuropathy which was changed to no neuropathy after two months of treatment. **Conclusion-** Study result indicates that Ayurvedic herbs along with Panchakarma therapy may play a major role in the management of Diabetic neuropathy.



#### Address of Correspondence:

**Dr. Savesh Kumar Singh**

Assistant Professor, Department of Panchakarma,  
National institute of Ayurveda, Jaipur

**Email ID :** sarveshksingh21@gmail.com

**Contact No :** 8619471075

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#### Introduction:

Diabetic neuropathies are nerve damaging disorders associated with diabetes mellitus. Globally diabetic neuropathy affects approximately 132 million people as of 2010 (1.9% of the population)<sup>[1]</sup>. Diabetic

neuropathy affects all peripheral nerves including motor neurons, autonomic nervous system and pain fibers. It is estimated that 50% of people with type 2 diabetes eventually developing some degree of peripheral neuropathy. About 90% of people with diabetic peripheral neuropathy have symmetric distal polyneuropathy. A patient can have sensorimotor and autonomic neuropathy or any other combination. Signs and symptoms vary depending on the nerve(s) affected. Orthostatic Hypotension or fainting when standing up and a loss of respiratory sinus arrhythmia - the usual change in heart rate seen with normal breathing are the two findings suggests autonomic neuropathy. Longer nerve fibers are affected to a greater degree than shorter ones in sensorimotor polyneuropathy. These are characterized by decreased sensation and loss of reflexes which occurs first in the toes on each foot and then extends upward. It is usually described as a glove-stocking distribution of numbness, sensory loss, dysesthesia and night time pain. The pain can feel like pricking sensation, burning sensation, achy or dull. A pins and needles sensation is more common. Loss of motor function resulted in dorsiflexion, contractures of the toes and loss of the interosseous muscle function leading to hammer toes. Cranial nerves are affected; neuropathies of the oculomotor nerve and abducens nerve are most common. Diabetics have a higher incidence of entrapment neuropathies, such as carpal tunnel syndrome. Mononeuropathies of the thoracic or lumbar spinal nerves can occur. In brief, common conditions which may be associated with diabetic neuropathy include mononeuropathy; mononeuropathy multiplex; third nerve palsy; autonomic neuropathy; diabetic amyotrophy or radiculopathy; a painful polyneuropathy and thoracoabdominal neuropathy.

Diabetic neuropathies are thought to result from diabetic micro vascular injury involving small blood vessels that supply nerves in addition to macro vascular conditions that can culminate in diabetic neuropathy. The first pathological change in the small blood vessels is narrowing of the blood vessels and the development of

blood vessel abnormalities, such as capillary basement membrane thickening and endothelial hyperplasia, increased oxidative stress, a build-up of glycation end-products, increased activity of the polyol pathway, activation of pro-inflammatory mechanisms which lead to diminished oxygen tension and hypoxia and resulted in neuronal ischemia, a well-established characteristic of diabetic neuropathy.

Only limited conservative procedures are available in modern medicine but without satisfactory improvement. No study is published in Pub Med for *Ayurvedic* approach on diabetic neuropathy till date. Here we represent a case of diabetic neuropathy which was successfully treated with *Ayurvedic* management. *Vatarakta* was the *Ayurvedic* diagnosis for the case.

**Case presentation** - A 63-year-old Hindu women with a 29-year duration of type 2 diabetes mellitus, with diabetic neuropathy, presented to our outpatient clinic, after a nearly 1 year period of severe neuropathic paresthetic pain in four extremities and her lumbosacral and buttocks region (saddle paresthesia). The pain estimate was 10/10 visual analog scale (VAS). Concomitantly, she felt anorectic, nervous and sad, had insomnia, tremors, a feeling of general coldness, and was suffering from chronic constipation. Patient was also taking medication for Hypertension, hypothyroidism and insomnia at the time of admission. Recent hemoglobin A1c (9.1%) was achieved on metformin 500mg twice daily. She was on Levo Thyroxin 100 mcg once a day, Telmisartan 12.5 mg once a day, Alprazolam 5 mg at night.

Two weeks prior to her visit, she completed MRI brain that revealed chronic small vessel ischemic changes in periventricular region, corona radiata and centrum semiovale. All other test results were within normal limits.

On examination, patient was anxious, appetite was apparently normal and tongue was uncoated. Micturition and bowel movement were normal. Patient had *Vatapitta Prakriti* with *Madhyama Samhanana* (medium body built), *Madhyama Sara* (medium purest body tissue),

*Sama Pramana* (symmetrical body proportion), *Madhyama Satamyā* (medium homologation), *Madhyama Satva* (medium mental strength), *Madhyama Vyayama Shakti* (medium capability to carry on physical activities), *Madhyama Aharashakti* and *Jaranashakti* (medium food intake and digestive power).

On physical examination she was pale and distressed. Her blood pressure was 124/90mmHg; pulse, 107 beats per minute; body weight, 80.9kg; height, 165cm; and body mass index (BMI), 29.7kg/m<sup>2</sup>. Diminished tendon reflexes were observed in four extremities especially in ankles. There was glove and sock hypoesthesia, and distal weakness of the hands with normal strength of the lower extremities. Patient current illnesses were arterial hypertension; insomnia and lower backache. Normal findings were detected in her complete blood count, liver and kidney functions tests, Thyroid profile, B12, 25 OH Vitamin D, rheumatic diseases profile, C-reactive protein and lactate plasma.

The most likely diagnosis for someone with diabetes who has pain in a leg or foot is Diabetic peripheral neuropathy. Vitamin B<sub>12</sub> deficiency, osteoarthritis, uremia, hypothyroidism, are the differential diagnosis. Various systemic condition, infections, autoimmune disorders, toxins, trauma, chronic inflammatory demyelinating polyneuropathy and inherited conditions can also be responsible for the neuropathy. Patient had normal biochemical and hematological parameters except for blood sugar with decreased ankle reflexes and decreased vibration perception to a 128-Hz tuning fork. Decreased ankle reflexes and an abnormally decreased vibration perception to a 128-Hz tuning fork are the characteristics of diabetic peripheral neuropathy<sup>[2]</sup>. Hence Diabetic peripheral neuropathy was considered as the primary diagnosis for the case. Patient also had severe aching or burning pain that affects the lower back, buttock and thighs, that was often worsen at night. These are the characteristic of diabetic amyotrophy, also known as lumbrosacral radiculoplexus neuropathy. In *Ayurveda* these sign and symptoms can be nearly correlated with *Vatarakta*.

Line of treatment for Diabetic neuropathies is similar to line of management of *Vatarakta* such as *Mridu Virechana* (mild purgation) and *Basti* procedures. *Saghrīta Basti* (*Basti* with *Ghrīta*) is considered as the best treatment for *Vatarakta*. *Basti* procedures is generally contraindicated in *Prameha* (~diabetes mellitus) but *Panchatikta Prasriti Basti* is indicated for *Prameha*. Hence *Saghrīta Pancha Prasriti Basti* was used for *Vatarakta* in the case. *Swedana* is also contraindicated for *Madhumeha* but in *Vatarakta*, *Parisheka* with *Shrīta Dugdha* (mild sudation with luke warm milk) in the form of *Shalishastika Pinda Swedana* was adopted for the patient.

Various *Panchakarma* interventions were adopted to treat this patient. *Mridu Virechana* with castor oil in dose of 20ml with Luke warm milk was given at night prior to the beginning of medical intervention to the patient. From next day *Shalishastika Pinda Swedana* for 28 days along with *Panchatikta Prasriti Basti* for 16 days were adopted. Along with these *Panchakarma* interventions selected *Ayurvedic* oral medicine –*Madhumehari Churna* - 5g [a proprietary medicine of National Institute of Ayurveda, Jaipur, India, containing 10 herbs], *Ashwagandha Churna* ( powder of *Withania somnifera* Dunal) -500mg *Dashmoola Kwatha* - 40ml, *Kaishore Guggulu*-500 mg and *Shiva Gutica* -500mg were administered twice a day. These oral medicines were continued for next one month.

Patient was assessed on modified neuropathy disability score which comprises of four clinical tests that are - vibration perception threshold, temperature perception, pin prick testing and Achilles tendon reflexes. The maximum score for modified NDS are 10. At the time of admission the modified NDS was 8 and it was changed to 3 after one month of treatment and 1 after two month of treatment.<sup>[3]</sup>

**Result** - Subjects were also graded according to neuropathy severity using 6 symptom scores (the presence or absence of foot pain, numbness, tingling, weakness, imbalance, and upper limb symptoms), 8 reflex scores (bilateral knee and ankle reflexes, each graded as absent, reduced, or normal), and 5 physical

examination scores (the presence or absence of pinprick, temperature, light touch, vibration, and position sense) for a total of 19 possible points. Grading was stratified such that <5 indicated no neuropathy, 6–8 indicated mild neuropathy, 9–11 indicated moderate neuropathy, and >12 indicated severe neuropathy. Before the treatment patient had moderate neuropathy. Patient was changed to mild neuropathy after one month of treatment and further changed to no neuropathy after two months of treatment.<sup>[4]</sup>

**Discussion**-Symptoms and *Samprapti* (pathogenesis) of *Vatarakta* has nearly resemblance with Symptoms and pathogenesis of diabetic neuropathy. Complications of *Vatarakta* are also similar to manifestation of Diabetic neuropathy. Etiological factors, prodromal symptoms and complications of *Prameha* and *Vatarakta* are also nearly same. Excessive use of *Katu* (pungent) and *Tikta* (bitter) *Rasa*, excessive walking, excessive exercises to treat *Madhumeha* (DM-2)[ a type of *Prameha*] may lead to pathogenesis of *Vatarakta*. Micro and macro vascular changes and neuronal ischemia are the main pathology in diabetic neuropathy which are similar the *Raktadusti* (vitiation of blood) and *Vatadusti* (vitiation of *Vata*) of *Vatarakta*. The patient was treated on the line of management of *Vatarakta*. *Saghrta Kshira Basti*, *Shilajatu* and *Guggulu* are indicated for *Vatarakta*.<sup>[5]</sup> *Mridu Snehana* and *Swedana* were provided for the case in the form of *Shalishastika Pinda Swedana*. *Basti* can break pathogenesis of *Vata Vyadhi* by removing *Margavarodha* by purification of channels and *Dhatukshaya* by its *Brihmana* (~ nourishing) property. *Basti*, used in the case was mainly made of *Tikta Rasa* and *Madhura Rasa*. *Mahapanchatikta Ghrita* and *Ashwagandha taila* (oil) were used in the formation of *Basti*.<sup>[6],[7]</sup> *Tikta Rasa* is used in the treatment of *Rakta Dosh*a and *Raktavaha Srotodusti* (pathogenesis in blood vessels). *Tikta Rasa* has *Sothaghana* (anti-edematous and anti-inflammatory) and *Pittahara* properties (suppression and elimination of deranged *Pitta Dosh*a). *Ghrita* and honey have *Madhura Rasa* (sweet taste) dominance. The combinations of these drugs may act as

*Vata pittahara* (suppressors and eliminators of deranged *Vata* and *Pitta doshas*) that may reduce inflammation and treat the Diabetic neuropathy condition.

Hence *Basti* used in the case was effective for the treatment of diabetic neuropathy. *Aswagandha* has *Rasayana* (immunomodulatory) and *Balya* (anabolic) properties<sup>[8]</sup> *Dashamoola Kwatha* is having *Tridoshaghana* property.<sup>[9]</sup> *Dashmooladi Shritakshira* is also indicated for pain relieving in *Vatarakta* condition.<sup>[10]</sup> *Shiva Gutica* is a *Rasayana* and helpful in *Vatarakta*, *Siroroga*, *Mukharoga*, *Swasa Roga* (dyspnoea), *Netraroga* etc.<sup>[11]</sup>

This case is important one as it throws new lights in the possible *Ayurvedic* Pathogenesis and treatments of diabetic neuropathy. Diabetic neuropathy may be successfully managed by these line of *Ayurvedic* treatment.

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### सारांशः

**परिचय** - डायबिटीज न्युरोपैथी तंत्रिका सूत्रों को हानि पहुंचाने वाले डायबिटीज मेलेटस से जुड़े विकार हैं। डायबिटीज न्युरोपैथी सभी परिधीय तंत्रिकाओं सहित मोटर न्यूरॉन्स, स्वायत्त तंत्रिका तंत्र और वेदना तंतु को प्रभावित करती है। जैव चिकित्सा में इसका कोई संतोषजनक उपचार उपलब्ध नहीं है। यहां एक ऐसा वैयक्तिक अध्ययन प्रस्तुत किया गया है जिसका आयुर्वेदिक औषधियों और पंचकर्म चिकित्सा के द्वारा सफलतापूर्वक उपचार किया गया है |

**उपकरण और विधि** - एक ६३ साल की महिला जो डायबिटीज न्युरोपैथी से पीड़ित थी, का उपचार पंचकर्म प्रक्रिया एवं आयुर्वेदिक औषधि द्वारा किया गया। डायबिटीज न्युरोपैथी के लक्षणों की साम्यता इस अध्ययन के लिए आयुर्वेद में वातरक्त के साथ कि गई है। आयुर्वेदिक उपचार को इस अध्ययन में न्युरोलॉजिकल नैदानिक स्थितियों को सुधारने के लिए निर्देशित किया गया है। रोगी का २८ दिनों के लिए पंचकर्म प्रक्रिया जैसे शालीषष्टिक पिण्ड स्वेदन एवं १६ दिनों के लिए सघृत पञ्चतित्त पञ्चप्रासृतिक बस्ति के साथ-साथ आयुर्वेदिक औषधि द्वारा उपचार किया गया था। आयुर्वेदिक औषधि जो प्रयुक्त की गयी थी वह थी - मधुमेहारी चूर्ण - ५ ग्राम, अश्वगंधा चूर्ण (विथानिया सोमिफेरा डनल चूर्ण) - 500 मिलीग्राम, दशमूल क्वाथ - 40 मिली, कैंशोर गुग्गुलु - 500 मिलीग्राम और शिवा गुटिका - 500 मिलीग्राम, सभी औषधियाँ दिन में दो बार प्रयुक्त की गई थी | इन आयुर्वेदिक औषधियों को अगले एक महीने तक जारी रखा गया था |

**परिणाम** - संशोधित न्युरोपैथी डिसेबिलिटी स्कोर और १६ बिंदुओं के आधार पर न्युरोपैथी के परिणाम के लिए ग्रेडिंग का आंकलन किया गया जो अच्छा सुधार दिखाता है। उपचार से पहले रोगी मध्यम परिधीय न्युरोपैथी से पीड़ित था जिसे दो महीने के उपचार के बाद न्युरोपैथी रहित में बदला गया था।

**निष्कर्ष** - अध्ययन परिणाम बताता है कि पंचकर्म के साथ - साथ आयुर्वेदिक औषधियाँ डायबिटीज न्युरोपैथी की चिकित्सा में एक प्रमुख भूमिका निभा सकती हैं।