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An Ayurvedic Protocol to Manage Diabetic Neuropathy-A Case Report

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Abstract

Introduction

Case

Intervention: The patients underwent one course In-Patient comprising of 15 days of Ayurvedic management and Outpatient management for 3 months inclusive of Oral medications and Ayurvedic treatment procedures.

Results

Marked improvement was seen in vibratory perception and pressure perception. The glycemic control of the patient improved

Conclusion: The main aim of the treatment was to revert the neuropathy changes as much as possible and provide a better quality of life. This study illustrates that cases of Diabetic neuropathy can be successfully managed using *Ayurveda*, and these treatments can be considered as an alternative option.

Keywords: Ayurveda, Case Report, Holistic Approach, Prameha,

Introduction

Diabetic neuropathy is a highly prevalent microvascular complication of diabetes mellitus (DM). More than 50 percentages of individuals with long-standing DM tend to develop

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Diabetic Peripheral Neuropathy (DPN) in their second decade of the disease. The main symptoms of Diabetic neuropathy include sensation of tingling, numbness, sharpness, or burning that usually begins in the feet and extends proximally. (1) *Suptatha*(numbness) and *Daha* (burning sensation) especially in the extremities are considered as *Purvarupa*(prodromal features) of *Prameha* according to Ayurveda. (2)*Daha* is also mentioned as one among the *Upadrava* (Complication) of *Prameha.* Symptoms like pain, numbness, tingling sensation are the result of vitiated *Vata* were as burning sensation points to Pitta. The symptoms of Diabetic Peripheral Neuropathy may be compared to*Rakthavrtha Vata* as described by *AcaryaCaraka(3).* Ayurvedic therapies and oral medicines are found to be a betteraid due to Allopathy medicine as they yield less than satisfactory results in chronic or painful DN.(1)

Methodology

The efficacy of an *Ayurvedic* treatment protocol to manage Diabetic Neuropathy was assessed in this report. It was prepared according to the Case Report (CARE) guidelines (4) to ensure transparency and effectiveness in reporting. Institutional ethical clearance was not obligatory for this study; however, informed written consent was taken from the patient before detailing his case.

Case Presentation

A 52-year-old male office manager presented to the OPD of Sreedhareeyam Ayurvedic Hospital with a complaint of numbness and swelling in both legs, with left more than right, since 2017.Associated symptoms were an occasional burning sensation in both feet, which aggravated at night. A complete physical examination including a neurological examination done by an allopathic physician ruled out mono-neuropathies and mono-neuritis multiplex, as well as dietary deficiencies and metabolic disorders that may result in neuropathies. He was prescribed with Neurobion forte tab (a combination of B vitamins), which he continued to use for one year.He had his first consultation with Sreedhareeyam Ayurvedic Hospital in March 2019.

He has had diabetes and hypertension since 2009and is under insulin therapy (morning 36 units and night 16 units). His immediate family members do not present with similar complaints. His bowel, appetite, micturition, and sleep were normal. He stopped smoking two years ago and is an occasional drinker. He leads a sedentary lifestyle, with a BMI of 31.8 kg/m2. Cardiovascular, gastrointestinal, and central nervous system examinations were

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normal. Vital signs showed a blood pressure reading of 140/90mmHg, pulse rate and heart rate of 88 beats per minute, respiratory rate of 16 breaths per minute, the weight of 94 kg, and height of 172cm.

General examination by inspection showed legs with no deformities, callus, infections, or fissures. Peripheral neuropathy examination of both legs demonstrated an absence of distal weakness, along with normal muscle tone with resistance, normal muscle strength, normal ankle and knee reflexes, and absence of muscle wasting. Sensory examination showed the presence of normal thermal sensitivity, normal monofilament examination, pinprick assessment, and light touch assessment along with altered vibratory perception in both legs.A slight discoloration was noticed in the feet. Michigan Neuropathy Quality of life using the Nottingham Health Profile was 10. FBS was 232 mg/dl and HbA1C was 8.7 %.

Biothesiometry readings showed a reading of 49 volts in both big toes; 48 volts and 37 volts in the anterior lateral eminence of the sole in the right leg and 43 volts and 49 volts in the anterior lateral eminence of the left leg; 40 volts and 49 volts in the anterior lateral sulcus in both legs; 49 in both plantar regions; and 49 volts in both heels. The average reading of the right leg was 45 volts while the left leg was 48 volts. **(Figure 1)**

The patient's *Prakrti* was *Kapha-Vata, Sara* was *Rakta, Samhanana*was *Madhyama, Pramana*was *Sthula, Sattva* was *Avara, Satmya*was *Madhyama, AharaSakti* was *Madhyama, VyayamaSakti*was *Avara,* and *Vaya* was *Madhyama*.

The intervention adopted for this case reflected the treatment of *Vataraktam*entioned by *Vagbhata.*Initially, the patient was given medicines on an outpatient basis for a period of three months **(Table 1),** after which heunderwent one course of inpatient treatment for 15 days, viz *DhanyamlaDhara, Lepa, Abhyanga, PadaAvagaha, and SashtikaSalipindasweda* **(Table 2).**All medicines were manufactured at Sreedhareeyam Farm herbs India, Pvt, Ltd, the hospital's GMP- certified manufacturing unit.

The diet regulations were one of the key measures to control diabetes. During the treatment course all major food groups except meat, fish, and poultry, were advised in the right quantity amounting to 1600 Kcal. Vegetables and pulses were advised for liberal use without adding extra dressing and oil because of their high concentrations of fibre. Oils, lipids, and sweets were restricted. Products prepared from refined flour were restricted as they increase serum glucose. Mild to moderate exercise was also advised.

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Result

Biothesiometry readings at discharge improved to 16 volts in the big toe of the right leg and 14 volts in the big toe of the left leg; 23 volts and 17 volts in the anterior lateral eminence of the right leg and 26 volts and 28 volts in the anterior lateral eminence of the left leg; 33 volts in the anterior lateral sulcus of the right leg and 27 volts in the anterior lateral sulcus of the left leg; 28 volts in the palmar region of the right leg and 35 volts in the palmar region of the left leg; and 25 volts in the heel of the right leg and 34 volts in the heel of the left leg. MNSI readings at discharge showed an improvement to 3 from 8 (62.5% improvement) on the History questionnaire and 0.5 from 4 (87% improvement) in the physical assessment.(Figure 3)Marked improvement was seen in vibratory perception and pressure perception as shown on the biothesiometry readings. The FBS at the time of discharge was 125 mg/dl compared to 232 mg/dl at the time of admission. The swelling and discolouration had reduced completely.

Discussion

Diabetes mellitus is closely compared to Prameha in the Ayurvedic canon, which denotes a set of clinical disorders with frequent abnormal micturition. Simultaneous vitiation of all three doshas manifests 20 types of Prameha. The treatment principles of *Prameha*includes Dietary and lifestyle modifications, therapies like bio- purification, palliative and rejuvenative

*VataDosha*initiates bodily functions and receives stimulations from the external environment. It is the sole factor for health in its equilibrium, at its own *Sthana*, and in motility. The factor of motility is related to neurological function. The ability of the individual to sense the condition of the environment is attributable to *Sparsa* or tactile perception. The *TvakIndriya* is the *Asraya*for *Vata* and is all-pervasive. From this, all other *Gunas* are experienced, i.e., with touch. The inability of any of the sensory or motor functions as observed in neuropathy is attributable to the vitiation of *Vata.*

The probable *Nidanas*observed in this patient were overindulgence in foods that were *Guru* (heavy), *Snigdha* (unctuous), *Sita* (cold), and *Picchila* (slimy) by nature. These resulted in *Dhatvagnimandya* (impaired digestion at the level of the tissues), which in turn lead to the production of *Ama* (undigested, toxic waste). The weakened *Agni* was not able to produce proper *Anna Rasa* (the essence of food). *Dhatvagnimandya* of *Medas*(adipose tissue) resulted in the failure of nourishment of the other *Dhatus, viz., Asthi* (bone), *Majja* (marrow), and

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Sukra (seminal fluid), resulting in their *Kshaya*(decrease). This *Kshaya*manifests in the form of neuropathy and other consequences of diabetes mellitus.

The *Rukshata* (dryness) in the patient's body as a result of increased *Vata* caused a failed vasodilator mechanism that altered the functions of endoneurial and epineural blood vessels. Sensory disturbances in this patient were caused by affected *RaktaDhatu* (blood tissue), It also resulted in *DhamaniPraticaya* (hardening of vessels), a *Nanatmaja Vikara* of *Kapha,* as evidenced by microangiopathy.

Pricking pain in this patient was significant of *SucibhirivaTudyate* (feeling of pins and needles), which is a *Lakshana* of *SonitavrtaVata* described by *AcaryaSusruta* and *MajjavrtaVata* described by *AcaryaCaraka*. The tingling sensation is indicative of *Cumcumayana,* a feature of *SonitavrtaVata*told by *AcaryaSusruta; HarshaLomaharsha,* a feature of *TvaggataVata*as per *Susruta(6)* and *PittavrtaSamanaVata*told by *Caraka*.(5)The burning sensation is indicative of *Daha,* a *Purvarupa*and *Upadrava* of *Prameha*told in *CarakaSamhitaNidanaSthana;(2)Vidaha,* a *NanatmajaVikara* told by *Caraka; Plosha,* a *NanatmajaVikara*of *Pitta* explained by *AshtangaSangraha;* and *Pariplosha,* a *Lakshana*of *KaphaKshaya*and *RaktaMedogata Pitta* as per *AshtangaSangraha,(7)*and a *Upadrava* of *PittajaPrameha* as per *Susruta.*The numbness was indicative of *Supti,* a *Purvarupa*of *Prameha*as per *CarakaSamhitaNidanaSthana*. Abnormal perceptions of pain were indicative of *Toda,* a *Lakshana*of*VyanavrtaPrana* told by *Caraka; Sula,* a *Lakshana*of *PramehaUpadrava* told by *SusrutaSamhitaNidanaSthana*; and *Bheda,* a *NanatmajaVikara*of *Vata.*

All the symptoms of Diabetic Peripheral Neuropathy seem to be of RakthavruthaVata. When Vata gets A*vrutha* (clouded) by *Raktha* there are symptoms like excessive pain associated with a burning sensation in the area between *Tvak (skin)* and *Mamsa*(muscle) and also swelling, redness and formation of mandalas are developed. Similar symptoms are seen in Diabetic peripheral neuropathy also. While describing the treatment Acharya Charaka mentions the therapies prescribed for the treatment of vataraktha are to be administered in the case of Rakthavruthavata (5). So along with the treatment of*Prameha*, considering treatment of Vataraktha holds good for treating Peripheral Diabetic Neuropathy.

ManjishtadiKvatha was instrumental in improving blood flow to the nerves and, by its *Pitta-KaphaSamana*property and *SitaVirya*, reduced the burning sensation and pain. *KaisoraGuggulu* aided in providing nutrition to the nerves and reduced the effects of *Vata* by

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its properties of *Dipana-Pacana, Anulomana,* and *SrotoSodhana.* These were key factors that enabled stimulation of the nerves and relief of the condition. *MehaSree,* a proprietary medicine of Sreedhareeyam Farmherbs India, Pvt., Ltd., helped to both maintain and reduce *Prameha. SahacaradiTaila*was administered with *ManjishtadiKvatha* to augment its efficacy and to enhance the bio-availability of the *Kvatha.* The use of *AvartanaTaila* was to increase its potency and tackles the *Srotorodha*(obstruction of *Srotas*) in the lower limbs.

*Dhanyamla Dhara*and *Lepa*relieve the *Kha-Vaigunya*(pathological activity) of *Vata*in the lower limbs by abolishing the *Srotorodha*and *Avarana.* This was made possible by the *Ushna* (hot), *Tikshna* (sharp), and *Sukshna* (subtle) properties of the medicines. *PindaTailaapplication* and *DasamulaKsheeraDhara*relieved the pain and numbness in the legs. Both medicines are indicated for pain, burning sensation, and numbness. *Sashtika Sali Pinda Sveda* provided strength to the legs with its *Balya*(strengthening) and *Vata Hara properties* by nature.

Common effects of the medicines included antioxidant, anti-diabetic, and hypoglycemic. They were *Vata-Pitta Samana*(pacified Vata and Pitta), *Dipana-Pacana* (digestive and carminative),*Avaranahara*(relieving occlusion),*Prameha Hara* (anti-diabetic), *Sothahara* (anti-edematous), *RaktaPrasadaka*(blood-purifying), and *Rasayana*(rejuvenative).

Conclusion:

It can be said that Ayurvedic treatment modalities that were used were found to be very effective in reversing the diminished vibratory perception. This treatment was beneficial in reducing the sensation of burning, numbness, tingling, and pain in the lower limbs. The results of this study may be validated using large-scale sample trials.

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Table 1: Oral Medication

Sl no	Medicines	Ingredients	Dose	Adjuvant	Time	Duration	Ayurvedic Pharmacology
1	*Manjishtadi Kashayam*	Rubiacordifolia, Emblicaofficianalis, Terminaliachebula, Terminaliabellericaetc	60ml	Warm water	Twice a day before food	3 months	Kapha Pitta samana,RaktaPrsadana, Balya, Mutrala, Dipana, Lekhana
2	*KaisoraGuggulu*	Commiphorawightii, Terminaliachebula, Terminaliabellerica, Piper longumetc	1 Tablet	*ManjishtadiKashayam*	Twice a day before food	3 months	Tridosahara, RaktaPrsadana, Medhohara, Srotoshodhana, Lekhana, Malanulomana
3	*Sahacharadi 7 Avarthy*	Strorbilanthus ciliates, Dasmoolam, Asparagus racemosus, Asphaltum, Gingelly oil, Cow's milk	10 drops	*ManjishtadiKashayam*	Twice a day before food	3 months	Vata-Pitta samana, Anulomana, RaktaPrasadana, Balya, Srotoshodhana, Mutrala

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4	*Capsule Mehasree*[*]	Triphala, Curcuma longam, Tribulusterrestris, Salacia reticulate,Azadiractaindicaetc	1 Tablet	*SukhoshnaJala*	Twice a day after food	3 months	Kapha-Pittahara,Lekhana, Mutala, RaktaPrasadana

*Patented medicines of Sreedhareeyam Farmherbs India Private Ltd

Table 2: External Procedures

Treatment	**Medicine**	**Ingredients**	**Procedure**	**Duration**	**Probable mode of Action**
DhanyamlaDhara	*Dhanyamla* (Fermented Cereal water)	Oryza sativa, Macrotylomauniflorum,Panicumsumatrense, Trachyspermuminvolucratumetc	Lukewarm Dhanyamla was poured gradually from the hip joint downwards to the feet in four positions (sitting, left lateral, right lateral, and supine) for a period of 45 minutes	17-09-2019- 19-09-2019 (3 days)	Anti-inflammatory, analgesic, anti-histaminic, carminative and digestive properties at the cellular level and connective tissue breakdown (8)
Lepa	*EllumnishadhiChoornam*	Sesamumindicum, Curcuma longa, Oryza sativa, Terminaliachebula, Tinosporacordifoliaetc	A paste prepared using 500g of herbal powder and 250 ml of lukewarm water was applied over the lower limbs in a uniform consistency. Till the paste dries.	17-09-2019- 19-09-2019 (3 days)	• Penetration through the five layers of the skin • Absorption of lipid extracts by the cell membranes • Facilitation of entry into the systemic circulation. • Helps in reducing the discolouration of the skin
Abhyanga	*PindaTailam*	Rubiacordifolia, Vateriaindica, Hemidesmusindicus, Honey bee wax, sesame oil	Application of lukewarm oil from hip joint to the feet in four-position (sitting, left lateral, right lateral, and supine) for a period of 45 minutes	20-09-2019- 24-09-2019 (5 days)	• Stimulate the tactile receptors and the mechanoreceptors of the skin of the skin • Causes vasodilation in subcutaneous vessels, virya of the drug gets absorbed

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PadaAvaghaha	*Dasamoola KsheeraPaka*	Aeglemarmelos,Desmodiumgangeticum, Gmelinaarborea, Oroxylumindicum, Premnaserratifolia, Pseudarthriaviscida, etc and milk	Immersing the lower body in a tub filled with *Dasamoolaksheerapaka* made by boiling *Dasamoola* coarse powder (700 gm), water 12 litres, and milk 3litres reduced to 3 liters, for 1 hour	20-09-2019- 24-09-2019 (5 days)	• Ushnaguna (Hot potency) of Sweda dilates the capillaries, thus increases circulation
SashtikaShaliPindaswedham	*Sashtika* rice boiled in *ManjishtadiKashayam*	Sashtika rice, Rubiacordifolia, Emblicaofficianalis, Terminaliachebula, Terminaliabellericaetc	Bolus made out of sashtika rice boiled in manjishtadhikashayam, is dipped in manjishtadhiksheerapaka, and applied lukewarm from hip downwards to feet. The paste is removed simultaneously before cooling.	25-09-2019- 01-10-2019 (7 days)	• Nourishes and give strength to muscle tissues • Therapeutic heat causes vasodilation • Anabolism increases as circulation improves, tissue receives more oxygen

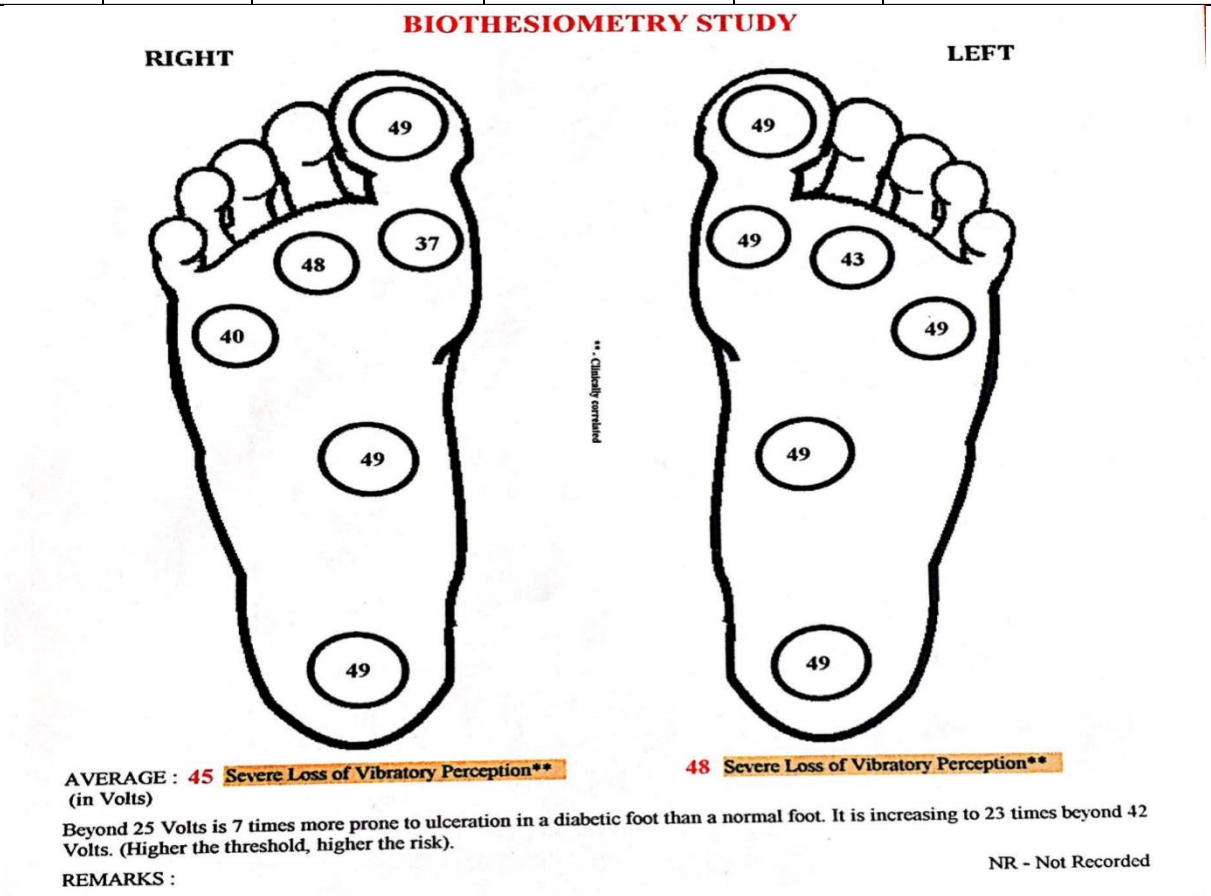

Figure 1: Biothesiometry Readings at Admission

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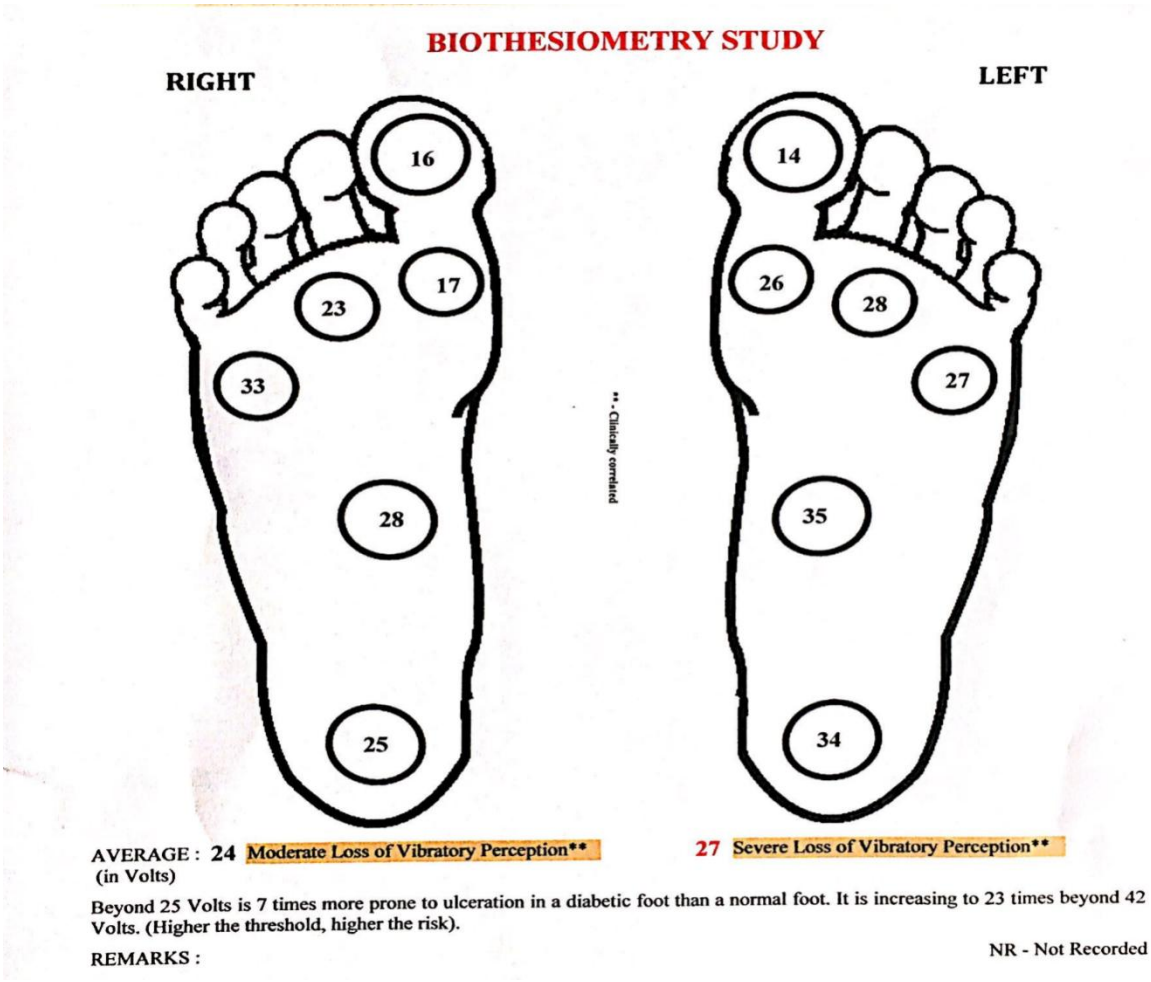

Figure 2: Biothesiometry Readings at Discharge

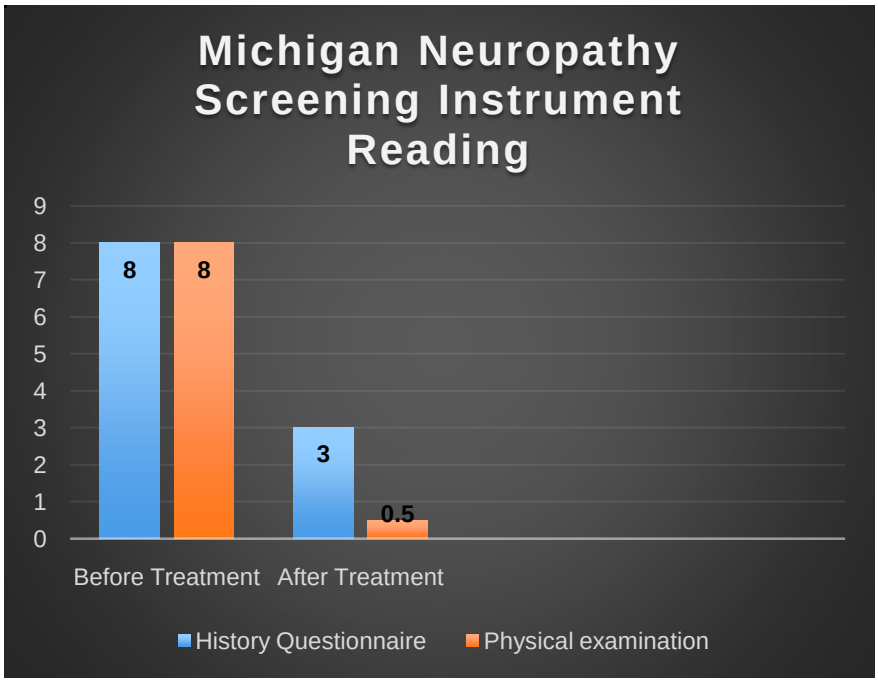

Figure 3:MNSI Questionnaire assessment