AYUSHDHARA
ISSN: 2393-9583 (P)/ 2393-9591 (O)
An International Journal of Research in AYUSH and Allied Systems

Case Study

MANAGEMENT OF PERIPHERAL NEUROPATHY SECONDARY TO CHRONIC KIDNEY DISEASE AND TYPE 2 DIABETES

Nachiket Vidyanand Dixit[1]*, Mandip Goyal[2], Charmi Mehta[3]
*[1]MD Scholar, [2]HOD, [3]Lecturer, Dept. of Kayachikitsa, ITRA, Jamnagar, Gujarat, India.

Article info
Article History:
Received: 25-11-2024
Accepted: 22-12-2024
Published: 15-01-2025

KEYWORDS:
Chronic kidney disease, *Madhumeha*, Type 2 diabetes, Peripheral Neuropathy, Type 2 diabetes, DSPN.

ABSTRACT

Peripheral neuropathy is defined as a condition involving peripheral nervous system in which there is structural and functional damage to the peripheral nerves of sensory, motor, or mixed variety. In case of type 2 diabetes, most common neuropathy is DSPN (Distal Symmetric Polyneuropathy). Prevalence of diabetic neuropathy lies between 26 to 31%. This case report discusses the management of peripheral neuropathy in a 55-year-old male patient with type 2 diabetes and chronic kidney disease (CKD). The patient consuming oral hypoglycemic agents, presented with burning sensation and numbness in both lower limbs over three years and was classified as CKD stage G4. Patient was diagnosed as *Madhumeha* (type of *Prameha* caused due to *Vata Dosha*) according to Ayurveda and treated accordingly with *Haritaki (Terminalia chebula)*- two grams; *Gokshura (Tribulus terrestris)*-one gram; *Pippali* (Piper longum) -500 milligrams; *Shweta Parpati*- 500 milligrams three times after food with lukewarm water; *Gokshuradi Guggulu* two tablets three times before food with lukewarm water; *Aragwadhadi Kwatha*- 20ml and *Vijaysaradi Kwatha*- 20ml before food with lukewarm water and *Guduchyadi Ksheerkashaya Yapana Basti* (medicated enema prepared with milk decoction of *Tinospora cordifolia*) containing *Madhu* (honey)- 30gram; *Saindhava Lavana* (pink salt)- five grams; *Guggulutiktaka Ghrita*–30mililiter*; Guduchi Siddha Ksheerkashaya* (*Tinospora cordifolia*)- 200 milliliter for 14 days with *Sarvanga Abhyanga* with *Bala Taila* and *Sarvanga Bashpa Swedana*. Post-treatment, the patient exhibited significant symptom relief, and his CKD improved from stage G4 to G3b per risk assessment tools. This case highlights the potential of Ayurveda in managing diabetic neuropathy and CKD, emphasizing the need for further research on integrative approaches combining *Shamana Chikitsa* (conservative management) and *Panchakarma* therapies for chronic complications.

INTRODUCTION

Peripheral neuropathy[1] is defined as a disorder which involves peripheral nervous system and damages peripheral nerves structurally and functionally. It affects quality of life of a person to a greater extent by hindering the regular activities of an individual. Overall prevalence of peripheral neuropathy lies between 1 to 8% and that of diabetic neuropathy lies between 26 to 31%.[2]

Access this article online	
Quick Response Code	
	https://doi.org/10.47070/ayushdhara.v11i6.1787

Type 2 diabetes is a common causative factor for peripheral sensory small fiber neuropathy which is often regarded as diabetic neuropathy. Chronic kidney disease is a clinical entity which occurs because of hampering of renal functions due to medical as well as systemic illness which affects filtration and reabsorption power of kidney. It also has a most important causative factor as type 2 diabetes which is termed as diabetic nephropathy.[3] Ayurveda does not mention clearly about chronic kidney disease or peripheral neuropathy. However, we can successfully treat these conditions or prevent further complications based on root cause analysis and treating the underlying pathology of *Madhumeha*.

A male patient 55 years old was known case of type 2 diabetes since 7 years and was gradually detected with raised Sr.creatinine levels and renal

parenchymal disease with moderate corticomedullary differentiation as per sonography dated 23/10/2023. He had a history of COVID 19 infection in 2020 after which he started with symptoms of peripheral neuropathy including pain and tingling numbness followed by burning sensation in peripheral extremities (both hands and legs). Patient took medications for the same but did not get desired relief. He was suggested for starting dialysis. So, he chose Ayurvedic regimen along with ongoing anti-diabetic medications as well as insulin for treatment purpose.

There was reduction is Sr. Creatinine from 2.83mg/dl to 2.02mg/dl with improvement in eGFR from 26 to 38. There was decrease in dose of insulin from 16 units to 10 units. Fasting glucose level improved from 109mg/dl to 96mg/dl and post-prandial blood glucose improved from 257mg/dl to 216mg/dl. In addition to these changes, VAS score was reduced from 06 to 02. There was significant relief in burning and tingling sensation over hands and legs, lethargy, unsatisfactory bowel habit, and appetite was satisfactorily improved. There were no any adverse effects of the treatment regimen followed. This case study could be helpful in planning further research studies on larger sample size and development of cost-effective standard regime in Ayurveda as an add-on safe treatment to avoid major complications and reverse disease pathogenesis in peripheral neuropathy and chronic kidney disease.

Patient Information

A male patient aged 55 years was apparently healthy before seven years. Patient was a businessman by profession with regular working hours. Patient was regularly consuming alcohol two times (180ml) every seven days for 15 years and has stopped consumption since last seven years, Patient was regularly consuming 'Pan Masala' three times a day since last 35 years with gradual reduction from seven times to three times per day. Patient also had unsatisfactory hard bowel habit since last seven to eight years. Patient had been detected with type 2 diabetes before last seven years and has been regularly consuming 'Oral Hypoglycemic Agents' i.e., Tab. Metformin (500mg) two times after food and Tab. Glimiperide (2 mg) once in the afternoon since then. Before three years, he was detected with Covid-19 infection requiring admission with steroidal management for seven days. After that, he started complaining of tingling sensation and burning in both upper and lower limbs with more predominance in right side than in left side. Patient had detected with hyperglycemia at that time and started with insulin 12 units per day. Patient was also detected with raised serum creatinine level 2.78mg/dl and eGFR -33. Patient also had erectile dysfunction, weight loss from 73kg to 69kg in last one year and lassitude. Patient took allopathic management for elevated serum creatinine but did not get desired relief and was advised for dialysis. So, he was admitted to IPD for sustained management.

Family History

No any disease in 1st degree relatives.

Clinical Findings

Ashtavidha Pariksha revealed that *Nadi* (pulse) was *Pitta-Vata Dosha Pradhana. Mutra Pravritti* (urine) was six times per day and 2 times per night with normal flow. *Mala Pravritti* (stool) was two times per day with hard unsatisfactory consistency. *Jivha* (tongue) was *Ishat Sama* with no pallor noted. *Shabda* (voice) of patient was *Gambhira* and *Sparsha* (touch) was *Anushna. Pingvarna* (yellowish brown) *Drishti* (eyes) was observed. *Madhyama Akruti* (mesomorph built) was noted in patient. Vitals of patients at time of consultation were pulse 80 beats per minute with regular rhythm. The patient was afebrile (97.6°F) with respiratory rate 16 per minute and Blood Pressure (B.P.) as 130/82 mmHg.

Diagnostic Assessment

Patient was assessed based on subjective criteria and objective criteria. Objective criteria were biochemistry investigations including Sr. creatinine; eGFR; Fasting and Post-prandial sugar levels. Subjective criteria used for this case was calculation of eGFR and CKD Risk assessment tool[4]. Sr.creatinine levels were assessed before and after the treatment.

Therapeutic Intervention

Patient was treated with *Shamana* (conservative treatment) as well as *Shodhana* (bio-cleansing treatment). *Shamana* treatment was done with *Haritaki Choorna* (*Terminalia chebula* L.) - two grams, *Goskshur Choorna* (*Tribulus terrestris* R.) -one gram, *Shweta-Parpati Choorna*- 500mg, *Pippali Choorna* (*Piper longum* L.)- 500mg three times a day after food with lukewarm water; *Gokshuradi guggulu* (250mg) - 2 tablets three times before food with lukewarm water); *Aragwadhadi kwatha* 20ml[5] and *Vijayasaradi Kwatha*[6] 20ml two times before food; *Eranda Bhrishta Haritaki* -four grams morning empty stomach with lukewarm water; *Amalaki Choorna* (*Emblica officinalis* L.) morning empty stomach with one gram *Haridra* (*Curcuma longa*) from 11/10/2023 to 23/10/2023. *Shodhana* treatment was done with *Guduchyadi Ksheer Kashaya Yapana basti (*treatment in which therapeutic enema is given by decoction prepared with milk) including *Madhu* (honey)- 30 grams, *Saindhav* (pink salt)– five grams, *Guggulutiktaka ghruta*– 20ml; *Ardra- Guduchi kalka* (paste of *Guduchi* in wet form) and *Ksheer kashaya* prepared with *Guduchi*- 250ml for 15 days. *Jatyadi*

tailam -20ml for local application over both soles was also advised to patient.

DISCUSSION

This case report is a case of peripheral neuropathy secondary to type 2 diabetes along-with chronic kidney disease. Peripheral neuropathy is a disease which affects nerves outside brain and spinal cord. It is classified based on part of nerve affected i.e., ganglionopathy, axonopathy, neuronopathy, and myelinopathy. Peripheral neuropathy can manifest both sensory, motor, or autonomic dysfunction.[7]

This case particularly refers to sensory type of peripheral neuropathy which particularly resembles to symptoms of small fiber neuropathy. Chronic renal failure is described as a medical condition wherein there is impairment of renal threshold due to progressive loss of filtration capacity of both kidneys. Serum creatinine and eGFR is considered as a best index to assess kidney function in both males and females.

High blood sugar levels particularly damage the vessels which supply peripheral nerves and in-turn stops the supply of essential nutrients to the nerves resulting in their damage. As per Ayurvedic diagnosis, case was diagnosed as *Madhumeha* which is progressive stage of *Prameha*[8] in which there is dominance of *Vata Dosha*. Due to long standing diabetes for more than five years and history of steroidal therapy during covid infection, patient gradually developed raised Sr.creatinine. As per Ayurvedic understanding, *Rasavaha*, *Raktavaha* and *Majjavaha Srotodushti* often affects *Vrikka* because it is composed of *Prasada* part (nutritive part) of *Rakta* and *Meda Dhatu*.[9] Nerves and their functions are often attributed to functions of *Vata Dosha. Madhumeha* particularly shows involvement of above *Srotasa* and *Vata Dosha.*

Based on above thinking, case was diagnosed as *Madhumeha.* Patient was treated with management as mentioned in therapeutic intervention*.* After treatment completion, patient had moderate relief in burning over both soles. There was no shooting pain in both lower limbs along-with parasthesia. Patient did not lose weight further. There was complete relief in unsatisfactory hard bowel habit, generalized weakness, and nocturnal micturition. Patient's insulin doses were reduced from 16 units to 10 units per day. eGFR was improved from 26 to 38.

Table 1: Follow-ups and outcomes

Date	Symptoms	Investigations
11/10/2023	Weight loss (73 to 69Kg) Burning over both soles Generalized weakness Nocturnal micturition Unsatisfactory hard bowel habit.	HbA1C= 6.8% Hb: 13.1gm% ESR: 11mm/hr FBS: 89mg/dl PPBSL: 257mg/dl Sr.creatinine: 2.83mg/dl Sr.Urea: 55mg/dl Sr.Uric Acid: 7.50mg/dl eGFR: 26 VLDL: 33.6mg/dl TGL: 168 mg/dl Insulin dose: 16 units
12/10/2023	Burning over both soles Generalized weakness Nocturnal micturition Wt- 69 Kg	Insulin dose: 12 units
18/10/2023	Burning over both soles (moderate relief) Generalized weakness (moderate relief) Wt- 69 Kg	Insulin dose: 12 units
07/11/2023	Burning over both soles (moderate relief) Generalized weakness (complete relief) Nocturnal micturition (complete relief) Unsatisfactory bowel habit (complete relief) Wt- 69 Kg	FBS: 96 mg/dl PPBSL: 216 mg/dl Sr.Creatinine: 2.02mg/dl e-GFR: 38 Insulin Dose -10 units

Table 2: Investigations

Investigations	Before Treatment (11/10/2023)	After Treatment (07/11/2023)
FBS PPBSL	89 mg/dl 257 mg/dl	96 mg/dl 216 mg/dl
Sr.Creatinine	2.83 mg/dl	2.02 mg/dl
eGFR	26	38
CKD Risk Tool	G4	G3b

Table 3: Probable mode of action of treatment

Intervention with dosage	Time of administration	Mode of Action
Haritaki Choorna (Terminalia Chebula) -2gm *Gokshura Choorna* (*Tribulus terrestris* R.) - 1g *Pippali Choorna* (*Piper longum* L.) - 500mg *Shweta Parpati* - 500mg	1-1-1 times After food with lukewarm water	*Mootrala* (diuretic); pacifying *Kleda; Pippali* acts as a *Yogavahi* (catalyst)
2. *Gokshuradi Guggula*(250mg)	2-2-2 before food with warm water	To provide strength to *Apana Kshetra*
3. *Aragwadhadi Kwatha* -20ml *Vijayasaradi Kwatha* – 20ml	2 times before food	*Pramehaghna* (pacifying *Prameha), Aragwadhadi Kwatha* for *Nitya Rechana* (purgative) of *Vikrita* (vitiated) *Pitta Dosha* pacifying *Ashraya-Ashrayi Rakta Dhatu*.
Erand Bhrushta Haritaki – 4gm	Morning empty stomach	*Anulomana* (mild purgation)
Amalaki Choorna (*Emblica officinalis* L.)- 3gm + *Haridra* (*Curcuma longa*) -1/4th spoon with lukewarm water	Early morning	*Pramehaghna; Amalaki having Sara Ruksha Guna* to pacify *Kleda*

Table 4: Probable mode of action of *Yapana Basti Krama*

Procedure	Mode of action
Sarvanga Abhyanga with *Bala Taila* and*Sarvanga Bashpa Swedana* (16 days) ***Yapana Basti Krama:*** *Guduchi Siddha Ksheerkashay* -250ml *Guggulu-Tiktaka Ghruta*: 30ml (*16 days)	*Saksheer Basti Prayoga* can be done in the treatment of *Asthi-Majjavaha Srotasa* involvement.[10] *Guggula Tiktaka Ghrita:* *Vata-Pitta Dosha Shamana*

CONCLUSION

This case report suggests insight about management of diabetic neuropathy along with chronic kidney disease through systematic Ayurvedic treatment protocol. It also suggests that principles of management of *Madhumeha* can be effectively implemented in management of diabetic neuropathy. Successful improvement can be seen in quality of life of patient and as per CKD Risk assessment tool. Same protocol can be applied in larger sample size to validate the result.

Declaration of Patient Consent

Authors declare that they have obtained patient consent form, where the patient has given his consent for reporting the case along with the images and other clinical information in the journal. The patient understands that his name and initials will not be published and due efforts will be made to conceal his identity, but anonymity cannot be guaranteed.

Abbreviations Used

mg/dl: Milligrams/deciliter

gm: Grams

Kg: Kilograms

mm/hr: Millimiter/hour

mmHg: Millimiters of mercury

eGFR: Estimated glomerular filtration rate

REFERENCES

1. Kasper Fauci, Hauser, Longo, Jameson, Loscalzo. Harrison's Principles of Internal Medicine. 19th edition. Part 2, Section 3, Chapter 459: Nerve and muscle disorders– Peripheral Neuropathy. McGraw Hill Publications, 2015. pp. 2674, 2688.
2. Hicks CW, Selvin E. Epidemiology of Peripheral Neuropathy and Lower Extremity Disease in Diabetes. Curr Diab Rep. 2019; 19(10): 86. doi: 10.1007/s11892-019-1212-8. PMID: 31456118; PMCID: PMC6755905.
3. Andrei Cristian B, Amorin Remus P. Diabetic Neuropathy Prevalence and Its Associated Risk Factors in Two Representative Groups of Type 1 and Type 2 Diabetes Mellitus Patients from Bihor County. Maedica (Bucur). 2018; 13(3): 229-234. doi: 10.26574/maedica.2018.13.3.229. PMID: 30568743; PMCID: PMC6290177.
4. National Kidney Foundation. Chronic Kidney Disease. [Internet]. Available at: www.kidney.org.
5. Tripathi Brahmanand, Editor. Sharangdhara Samhita by Acharya Sharangdhara with Deepika commentary by Adhamalla and Anjana-Nidana commentary by Agnivesha. Madhyama Khanda, Chapter 8, Verse 23. Chaukhamba Surbharati Prakashan; 2017.
6. Tripathi Brahmanand, Editor. Sharangdhara Samhita by Acharya Sharangdhara with Deepika commentary by Adhamalla and Anjana-Nidana commentary by Agnivesha. Madhyama Khanda, Chapter 8, Verse 43. Chaukhamba Surbharati Prakashan; 2017.
7. Kasper, Fauci, Hauser, Longo, Jameson, Loscalzo. Harrison's Principles of Internal Medicine. 19th edition. Part 2, Section 3, Chapter 459: Nerve and muscle disorders– Peripheral Neuropathy. McGraw Hill Publications, 2015. p. 2688.
8. Yadavji Trikamji Acharya, Editor. Charaka Samhita by Agnivesha with Chakrapanidatta commentary. Sutra Sthana, Chapter 17, Verses 78-80; and Chapter 28, Verses 34-36. 3rd edition. Satyabhamabai Pandurang, Bombay. p. 103.
9. Pandurang Jawaji, Editor. Sushruta Samhita by Acharya Sushruta with Nibandh sangraha commentary by Dalhana. Shareer Sthana, Chapter 4, Verse 31. Revised 2nd edition. Nirnaya Sagar Press, Bombay; 1931. p. 59.
10. Vd. Yadavji Trikamji Acharya, Editor. Charaka Samhita by Agnivesha with Chakrapani datta commentary. Sutra Sthana, Chapter 28, Verses 34-36. 3rd edition. Satyabhamabai Pandurang, Bombay.

Cite this article as:
Nachiket Vidyanand Dixit, Mandip Goyal, Charmi Mehta. Management of Peripheral Neuropathy Secondary to Chronic Kidney Disease and Type 2 Diabetes. AYUSHDHARA, 2024;11(6):152-156.
https://doi.org/10.47070/ayushdhara.v11i6.1787
Source of support: Nil, Conflict of interest: None Declared

***Address for correspondence**
Dr. Nachiket Vidyanand Dixit
MD Scholar,
Dept. of Kayachikitsa, ITRA,
Jamnagar, Gujarat, India.
Email: d.nachu.1998@gmail.com