



## Case Report

## Ayurvedic management of idiopathic small fibre neuropathy- A case report

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## ABSTRACT

Small fibre neuropathy (SFN) is a subgroup of peripheral neuropathy which is characterized by a disorder of the thin myelinated A- $\delta$  and unmyelinated C-fibres. With a prevalence of 52.95 per 100,000 population per year, the reported etiology of SFN has remained unclear in 23–93% of investigated patients and hence termed idiopathic small fibre neuropathy (iSFN). Pain is the most common symptom which is often described as burning. Conventional pain management is the only treatment option for iSFN, which is only modestly effective and associated with adverse events which lead to reduced drug compliance. It also affects the overall quality of life. This case report discusses the effect of Ayurvedic interventions in the management of iSFN. The patient was a 37-year-old male, who presented with severe pain, burning, and tingling sensation of B/L lower limbs and hands with decreased sleep for 5 years (visual analogue scale (VAS) was 10 and neuropathic pain scale (NPS) score was 39). Considering the signs and symptoms, the disease was diagnosed under the *Vata Vyadhi* (disease/syndrome caused by *Vata Dosh*) spectrum. The treatment included an initial OPD-based *Shamana* (treatment that pacifies the aggravated doshas) treatment with *Drakshadi Kwatha*, *Sundibaladwaya Ksheera Kwatha*, *Kalyanaka Gritha*, and *Ashwagandhadi Churna*. As the symptoms persisted, *Shodhana* (treatment in which aggravated doshas are expelled from the body) treatment was adopted which included *Mridu* (mild) *Shodhana*, *Nasya* (medicine administered through nasal route) and *Basti* (administration of medicine through the procto-colonic route). The intervention resulted in significant clinical improvement as evidenced by the reduction in VAS and NPS scores to zero and five respectively. The patient's quality of life also showed significant improvement.

This case report signifies the pivotal role of Ayurvedic intervention in the management of iSFN and encourages further research in this area. Integrative therapeutic approaches can be developed which may offer a promising strategy for managing iSFN and improving patient outcomes.

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## 1. Introduction

Small fibre neuropathy (SFN) is defined as a structural abnormality of small fibres characterized pathologically by degeneration of the distal terminations of small fibre nerve endings [1]. An epidemiological study addressing SFN reported an incidence of 11.73 per 100,000 per year with a prevalence of 52.95 per 100,000 population per year [2]. Pain is the most consistent symptom which is often described as burning or prickling and can have a pruritic component [3]. The symptoms of SFN vary between patients both in their severity and progression [4]. Most small fibre neuropathies

manifest in a length-dependent fashion, resulting in a sensory deficit in a stocking distribution in the lower extremities. When the condition is more advanced, a glove-like sensory deficit also develops in the upper extremities [5]. There are no direct references in Ayurvedic literature that can be correlated to small fibre neuropathy. All neurological functions are said to be the *Karma* of *Vata Dosh* and Ayurveda recognizes vitiated *Vata Dosh* as the cause of neurological disorders. Hence, small fibre neuropathy can be diagnosed as a disease under *Vatavyadhi* (disease/syndrome caused by *Vata Dosh*) spectrum based on its characteristics.

Tricyclic antidepressants (TCAs), serotonin-norepinephrine reuptake inhibitors (SNRIs), gabapentanoids, tramadol, lidocaine, and capsaicin are among the most effective conventional therapeutic options for the management of neuropathic pain. However, many of these first- and second-line options come with considerable potential for side effects [5]. A study on quality of life in the patients

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small fibre neuropathy has concluded that SFN has an overall severe impact on QoL, both physically and mentally [6]. Previous studies have shown that Ayurvedic therapeutic interventions for other types of neuropathies have led to significant improvements in symptoms and Quality of life for patients who have undergone conventional management. iSFN is an unexplored clinical condition in this aspect. Since small fibres are affected in iSFN, similar to diabetic sensory polyneuropathy, the therapeutic efficacy of Ayurvedic management for the same can be anticipated. Therefore, this case study can provide significant evidence for the effectiveness of Ayurvedic management in treating idiopathic small fibre neuropathy.

## 2. Patient information

### 2.1. De-identified demographic and other patient information

A 37-year-old married male, employed as a driver, belonging to middle economic status, with no known history of any comorbidities came to OPD of the Institute of Teaching and Research in Ayurveda, Jamnagar with complaints of severe pain, burning, and tingling sensation in B/L lower limbs (up to knee joint) and B/L hands for the last 5 years, which has worsened in the past six months. The patient adhered to a vegan diet, but had a low intake of food and water. He reported having a poor appetite and experienced constipated bowel movements. The patient had a urine output of 2–3 times a day. He was a chronic tobacco chewer for the past 23 years and drank 4–5 cups of tea per day. He did not engage in routine exercise.

### 2.2. Main concerns and symptoms of the patient

The patient experienced a gradual onset of pain, burning sensation, and tingling sensation in both soles of the feet five years ago. The symptoms were persistent, and progressive, and were accompanied by disrupted sleep and restlessness. Over the past six months, the severity of the symptoms increased, and they have extended up to B/L knees and B/L hands.

### 2.3. Medical, family, and psycho-social history including relevant genetic information

The patient did not have a history of any known medical comorbidity, and there was no family history of a similar illness or any other neurological or genetic illness. The patient was significantly

distressed by his condition, experiencing a feeling of worthlessness, frequent stress, and even suicidal ideations.

### 2.4. Relevant past interventions and their outcomes

The patient had a history of dengue fever 6 years back. The recovery was uneventful.

## 3. Clinical findings

### 3.1. Relevant physical examination and other clinical findings

The patient was of lean built and moderately nourished, with a height of 187 cm and weight of 70 kg, resulting in a BMI of 20 kg/m<sup>2</sup>. Vital signs were within normal limits. The examination of central nervous system showed preserved sensory function for pain, touch, and temperature, with no signs of large fibre involvement. Orthostatic hypotension was not observed. The patient reported a Visual Analogue Scale score of 10 for pain and a neuropathic pain scale score of 39 before treatment. Ayurvedic examination revealed that the patient's *Sharira Prakriti* was *Vata-pitta*, *Manasa Prakriti* was *Rajatama*, *Satmya* was *Madhyama* with *Lavana* and *Katu Rasapreeti* (predominantly salty and pungent taste food intake), *Aharasakthi* examined as *Abhyavaharanashakti* was found to be *Avara* (less than normal), *Jaranashakti* (power of digestion) was found to be *Avara* (less than normal) and *Vaya* was *Madhyama* (middle aged).

## 4. Timeline

The timeline of the patient's symptoms, diagnosis, treatment and outcomes are undermentioned in [Table 1](#).

## 5. Diagnostic assessment

### 5.1. Diagnostic methods

The patient's clinical presentation and disease progression led to a clinical diagnosis of idiopathic small fibre neuropathy by the neurologist. To rule out any known etiology, several investigations were performed, including hematological tests and biochemical profiles, which were all within normal limits. Bence Jones Protein and thyroid function test were also normal. Serological tests including Antinuclear antibody profile (ANA) and Anti-neutrophil cytoplasmic antibody (ANCA) were negative. Serum protein

**Table 1**

Timeline showing the disease course, diagnosis, treatment and outcomes.

Year/Month	Observation and Management
2018	The patient developed gradual onset of pain, burning sensation, and tingling sensation of B/L soles.
2019	He took consultation in tertiary care OPD for complaints as mentioned above. Multivitamins were advised. But reported no change in symptoms.
August 2020	He took general physician consultation as the severity of symptoms increased. He was advised Injection Mecobalamin (every 4th day- 5 doses), Tab. Cholecalciferol 60k weekly once, T. Aceclofenac (100 mg) and paracetamol (325 mg) (1/2–0 – 1/2), T. Rabeprazol sodium and Domperidone SR (1–0–0). There was no relief in symptoms
April 2021	He was diagnosed with Peripheral neuropathy by a general physician. Symptoms persisted and sleep was disturbed.
June 2021	He took neuro physician consultation. A detailed examination was done. Neurologically no findings were obtained. After excluding the possible other causes, he was diagnosed with idiopathic small fibre neuropathy.
July–August 2021	He came for Ayurvedic management with complaints of pain, burning sensation, and tingling sensation of B/L L/L up to knee joint and B/L hands. VAS was 10. NPS was 39. The ayurvedic intervention started with <i>Drakshadi Kashaya</i> , <i>Ksheerabala</i> (101) cap, <i>Ashwagnadhadi Churna</i> (1st course of treatment). VAS decreased to 8. Burning and tingling was persisting.
Nov–Mar 2022	<i>Sundibaladwaya kwatha</i> , <i>Kalyanaka Gritha</i> , <i>Pinda Taila Abhyanga</i> . (2nd course of treatment) VAS became 5. Burning reduced and sleep improved.
May–June 2022	<i>Deepana-Pachana</i> , <i>Snehapana</i> , <i>Virechana</i> , <i>Nasya</i> , <i>Yoga Vasti</i> , <i>Ksheera Vasti</i> was administered. (3rd course of treatment) VAS Zero. Mild burning sensation in the soles persisted. NPS score became 5.
Latest follow up (11/3/23)	There was no recurrence of pain and tingling sensation. But the burning sensation of soles persisted with lesser intensity and duration.

electrophoresis did not show the presence of a monoclonal band, and vitamin B12 levels were normal. Nerve conduction velocity (NCV) study and doppler of B/L lower limbs were normal. Magnetic resonance imaging (MRI) of the lumbar spine showed a posterior disc bulge at the L4-L5 level without compressive elements. The ayurvedic assessment was done based on the patient's presenting complaints.

### 5.2. Diagnostic challenges

Small fibre neuropathy may occur idiopathically or may be associated with various disorders, such as metabolic diseases (diabetes mellitus), infections (human immunodeficiency virus), inflammatory diseases (Sjogren's syndrome), and genetic diseases (Fabry's disease) [6]. Therefore, ruling out these possible causes becomes challenging. Idiopathic small fibre neuropathy (iSFN) lacks widely accepted diagnostic criteria, which hinders its timely diagnosis and treatment. The most commonly used set of criteria to diagnose iSFN includes the presence of any symptoms of iSFN, the absence of large fibre involvement, and reduced intraepidermal nerve fibre density (IENFD) [7].

### 5.3. Diagnostic reasoning including differential diagnosis

In this case, no metabolic, infection, or inflammatory causes were identified, leading to a diagnosis of idiopathic small fibre neuropathy based on the patient's clinical and small fibre neuropathy - symptoms inventory questionnaire (SFN-SIQ) [4] Depending upon the *Rupa* (symptoms), the disease was diagnosed under the *VataVyadhi* spectrum.

### 5.4. Prognostic characteristics when applicable

Small fibre neuropathy is a slowly progressive disorder that reaches a clinical plateau and can last for years. Previous studies reported that in 13%–36% of cases, SFN progresses to large fibre involvement which can be debilitating [8].

## 6. Therapeutic intervention

### 6.1. 1 Type of therapeutic intervention (allopathic drugs)

The patient was on the following conventional medication -Tab. Gabapentin & Nortriptyline Hydrochloride 400 (1/2–0–1), Cap. Agmatine Sulphate, Palmitoylethanolamide, Cytidine and Uridine Monophosphate (1–0–1), Cap. Inosine Monophosphate, Agmatine Sulphate and L-Carnosine (0–1–0), Tab. Duloxetine 20 (1–0–1), Tab Methylcobalamine, Lycopene, L-arginine, L- Carnitine, Selenium Dioxide, Alpha Lipoic Acid & Multivitamin (1–0–1) (From 2/06/21 to 10/7/21). Secondly, he was prescribed Tab. Pregabalin 75 + Nortriptyline 10 (1 - 0 - 1), Cap. Palmitic acid monoethanolamide, Lecithin & Luteolin (1 - 0 - 1)) which he continued for 1 month. Lastly, he was prescribed CBZ (½- 0 - ½), Tab. Gabapentin & Nortriptyline Hydrochloride (0–0–1) which he continued during Ayurvedic treatment.

### 6.2. Type of therapeutic intervention (Ayurveda)

The Ayurvedic treatment was administered in three courses at 2- month interval due to the patient's job constraints. The first two courses involved *Shamana* therapy, which was followed by *Shodhana* therapy. The latter included *Snehapana* (internal oleation), *Mridu Shodhana* (mild expulsion of doshas), *Nasya* (medicine administered through nasal route) and *Basti* (administration of

medicine through procto-colonic route). The Ayurvedic therapeutic intervention and their outcomes are described in Table 2.

## 7. Follow-up and outcomes

Follow-up was recorded every two weeks during the 1st and 2nd course of OPD-based *Shamana* treatment and also after the 3rd course of *Shodhana* treatment. The outcomes were measured after each course of treatment and after follow-up (1 month) using the Visual analogue scale (VAS) [9]. The Neuropathic pain scale (NPS) was assessed pre and post treatment and also after the follow-up [10]. Significant improvement in clinical outcomes with respect to VAS and NPS scores were obtained after the completion of the therapeutic intervention. After the first and second course of *Shamana* therapy VAS score reduced to 5. The VAS score became zero after the third course of *Shodhana* therapy. The NPS score which was 39 before the treatment reduced to 5 after the 3rd course of treatment. The first follow-up period was uneventful with no recurrence of pain and lesser intensity of burning sensation persisting in the soles. Subsequent follow-ups were chronicled every 2 months. After 3 months of follow-up, the patient was advised to continue *Sundibaladwaya Kheera Kwatha* (45 ml BD before food) with *Kalyanaka Gritha* (5 ml BD with the Kwatha) as a restorative treatment for a period of 1 month with a gap of 2 months. The Latest follow up was documented on the 11th of March 2023. There was no recurrence of pain and tingling sensation. But the burning sensation of soles persisted with lesser intensity and duration. The residual persisting symptom was unbothering and did not interfere his daily routines. His appetite and bowel movements were satisfactory. Sleep was largely unaffected. Moreover, there was no need to take any of the allopathic medicines to date.

## 8. Discussion

Small fibre neuropathy is neither preventable nor reversible therapeutically till date. Hence, the primary objective is to identify and cure the potentially treatable cause. Conventional medicine does not have any neuroprotective drugs to their credit till date. The trials for nerve regeneration through neuroprotective factors like nerve growth factors have shown a lack of efficacy and dose-dependent side effects. Ayurvedic literature enlists many formulations and single drugs, the neuroprotective actions of which are well documented. In this particular case, no etiological factors were identified. Hence, it was diagnosed as idiopathic small fibre neuropathy. There is no provisional diagnosis available for small fibre neuropathy in Ayurveda. The *Nidanas* (aetiology) identified in the patient were *Vatapitta Prakriti* (*Vata Pitta* predominant body constitution), *Lavana*, and *Katu Rasa Pradhana Ahara* (salty and pungent dietary intake), *Mandagni* (weak state of agni), excessive smoking, *YanaVahana* (excessive travelling), *Krodha* (angry temperament), and *Vishada* (depression) which caused *Vata Pitta Pradhana Tridosha Dushti* (*Vatapitta* predominant *Tridosha* vitiation). This *Dosha Dushti* might have led to *Rasa* (primary product of digested food), *Rakta* (blood tissue), *Mamsa* (muscle tissue), *Meda* (adipose tissue) and *Mano Dushti* (vitiation of mind). As a result of this *Dhatu Dushti* (vitiation of dhatu) the *Upadhatus* (the minor structural components that stabilize and sustain the body) i.e *Sira* and *Snayu* also got vitiated. *Sira* and *Snayu* are the main bodily components that can be correlated to nerve and nervous tissue. Moreover, the *Lakshanas* (symptoms) developed in the patient were *Ruk*, *Daha*, and *Chimichimayana* in the lower limbs. *Ruk*, *Chimichimayana* and *Daha* are the main *Prakopa Lakshanas* of *Vata* and *Pitta* respectively. Hence, the treatment principles adopted were *Vata Pitta Shamana* (alleviate *Vata* and *Pitta Dosha*) and *Samnjasthapana* (resuscitating medication).

**Table: 2**  
Ayurvedic therapeutic intervention.

Date	Medicine	Dose	Procedures	Outcome
1st course of <i>Shamana</i> treatment				
(15/7/21 to 20/8/21)	1. <i>Drakshadi Kashaya</i>	10 ml <i>Kashaya</i> + 45 ml boiled cooled water twice daily before food	–	VAS reduced to 8 No change in burning sensation No change in tingling sensation Sleep – disturbed (6–7 times awakening)
	2. <i>Ksheerabala</i> (101) <i>Taila</i>	10 drops with <i>Kashaya</i>		
	3. <i>Ashwagandhadi churna</i>	5 gm twice daily after food with 60 ml lukewarm water		
2nd course of <i>Shamana</i> treatment				
(11/11/21 to 3/3/22)	1. <i>Sundibaladwaya Ksheera kwatha</i>	60 ml <i>Kashaya</i> twice daily half an hour before food	<i>Pinda Taila Abhyanga</i>	VAS became 5. Burning sensation reduced. No Tingling sensation. Sleep – improved (3–4 times awakening)
	2. <i>Kalyanaka Ghrita</i>	10 ml twice daily with <i>Kashaya</i>		
3rd course of <i>Shodhana</i> treatment				
(23/5/22 to 27/5/22)	1. <i>Panchatiktak Kwatha</i>	10 ml <i>Kwatha</i> + 45 ml lukewarm water twice before food	<i>Dhanyamla dhara</i> for 7 days (B/L lower limbs)	Appetite improved after <i>Takrapana</i> .
	2. <i>Hingvashtak Churna</i>	5 gm BD before food with lukewarm water		
	3. <i>Chitrakadi Vati</i>	2 BD after food		
	4. <i>Takrapana</i>	1-L <i>Takra</i> with 20 gm <i>Vaishwanara churna</i>		
28/5/22 to 1/6/22	<i>Avapeedaka Snehapana</i> with <i>Tiktaka Gritha</i>	75 ml BD before food	–	Pain and burning sensation reduced
4/6/21	<i>Mridu Virechana</i> with <i>Nimbamrutadi Eranda taila</i>	50 ml with 200 ml lukewarm milk	–	Total Vega –5 <i>Samsarjanakram</i> - 2 days After <i>Sodhana</i> conventional medication was reduced to half the dose Conventional medication was stopped completely on 12/6/22
5/6/22 to 11/6/22	1. <i>Panchatiktakam Ksheerakashaya</i>	60 ml bd before food	<i>Nasya</i> with <i>Ksheerabala</i> (101) <i>Taila</i>	Conventional medication was stopped completely on 12/6/22
13/6/22 to 17/6/22	2. <i>Tiktaka Ghritam</i> Same	5 ml bd with the <i>Kwatha</i> Same		
18/6/22 to 24/6/22	1. <i>Dhanvantharam Kwatha</i>	15 ml <i>Kwatha</i> + 45 ml lukewarm water twice before food	1. <i>KsheeraVasti</i> 2. <i>Sarsapa Taila Abhyanga</i>	C/o stretching and churning type of pain in B/L lower limbs in night hours. Sleep – disturbed (6–7 times awakening) Nightmares + (Started on 15/6/22) VAS was zero Burning sensation reduced (Localised in the dorsal aspect of feet only) Appetite- Good Bowel – once a day Micturition- normal (4–5 times/day)
	2. <i>Kalyanaka Ghrita</i>	10 ml twice daily with <i>Kwatha</i>		

During the 1st course of *Shamana Chikitsa*, *Drakshadi Kwatha* [11], *Ksheerabala* (101) *Taila* [11, Chi 22/45–46], and *Ashwagandhadi Churna* were given. *Drakshadi Kwatha* is *Vata Pittahara* (pacifies both *Vata* and *Pitta* Dosha) and *Daha Shamana* (alleviates burning sensation). *Ksheerabala Taila* contains *Bala* (*Sida cordifolia* Linn.) and *Ksheera* (milk) as the main ingredients. Therapeutically, it acts as *Rasayana* (rejuvenation), *Indriyaprasadana* (feeling of wellbeing of the sense organs), *Jeevana* (to give life), and *Brimhana* (nourishing). Since *Sparshnedriya* is the main organ that is affected, it can be postulated that *Ksheerabala Taila* might act as *Rasayana* and *Jeevaniya* to the *Indriya* (sense organ). *Ashwagandhadi Churna* contains *Ashwagandha* (*Withania somnifera* (L.)), *Guduchi* (*Tinospora cordifolia*), and *Yashtimadhu* (*Glycyrrhiza glabra* Linn.) which are commonly used drugs as *Rasayana* (rejuvenation). Scientific publications substantiating the use of these drugs in various neurodegenerative disorders provide a strong evidence to their neuroprotective activity. The second course of treatment was planned with *Sundibaladwaya Ksheera Kwatha* [12] and *Kalyanaka Gritha* [11, US 22/45–46]. *Sundibaladwaya Ksheera Kwatha* possess *Supti Vatahara* (numbness/loss of sensation due to *Vata Dosha*) activity which might help in symptomatic relief. Any type of pain, whether it originates from peripheral nerves, the brain, or the spinal cord is a highly complex phenomenon. It affects the physical,

behavioural, cognitive, emotional, spiritual, and interpersonal aspects of one's life. Considering this multidimensional nature of pain and its impact on mental health, *Kalyanaka Gritha* was prescribed as a drug of choice. During the third course of treatment, *Panchtikta Kwatha*, *Hingwastak Churna* [11, Chi 14/34–35] *Chitrakadi Vati* [13], and *Takrapana* (drinking therapeutic buttermilk) with *Vaishwanara Churna* [11, Chi 14/34–35] [11, Chi 14/34] was administered for *Deepana Pachana* (digestion and metabolism enhancing). The medication clears and opens up the *Srotas* (structural or functional channels) and stimulates the *Jataragni* (metabolic factors located in the digestive tract). *Dhanyamla Dhara* is *Vata Kaphahara* (alleviate *Vata* and *Kapha Dosha*) and *Sparshaseetala* (cold to touch) [11, Su 5/79–81]. Hence, it might have removed *Avarana* (occlusion). *Snehapana* (internal oleation) was done as *Avapeedaka* (internal oleation in maximum divided dose) with *Tiktaka Gritha*, considering the *Adhonabhogata Sthanasamsraya* of *Vyadhi* (below umbilical localization of the disease) [11, Chi 21/16]. *Tiktaka Gritha* is specially indicated in *Daha* and all *Pittaja Vyadhi* [11, Chi 19/2–7]. After *Snehapana*, *Mridu Virechana* was done with *Nimbamrutadi Eranda Taila* [11, Chi 21/58–60] *Mridu Sodhana* is indicated in all *Vata Vyadhi*. *Yogavasti* was administered considering the role of *Vata* in the pathogenesis of the disease. As *Pitta* is the *Anubandha Dosha* (secondary dependent *Dosha*), *Panchatikta Kwatha* and

*Madhuyashtiyadi Taila* were selected as the main formulations for *Yogavasti* [11, Chi 22/41–44]. During *Yogavasti*, the patient developed stretching and churning type of pain in B/L lower limbs in night hours with mild disturbance of sleep. The temporary aggravation of symptom might be due to the withdrawal of allopathic drugs. Assuming this as a disturbance in *Vata Dosha*, internal medication were changed to *Dhanvantharam Kwatha* [11, ShS 2/47–52] and *Kalyanaka Githam*. *Dhanvantharam Kwatha* is indicated in all the diseases caused due to *Vata*. Towards the end of the course of treatment, *Panchatiktaka Kseera Vasti* was done as *Rasayana*. The patient was thereafter discharged and advised to revisit for follow up after 1 month. Marked improvement was observed after the *Panchakarma* therapy. VAS score reduced to zero and NPS score reduced to five. The overall physical and mental status of the patient also showed significant improvement with an uneventful follow up period. Being a disorder of chronic nature, idiopathic small fibre neuropathy requires long term treatment and follow up to understand the long-standing effect of Ayurvedic intervention.

## 9. Conclusion

Being a common disease that severely affects the quality of life with limited therapeutic possibilities in conventional medicine, it is important to note that case reports like this provide valuable insights into the potential of Ayurvedic therapeutic intervention for conditions like iSFN. However, Larger sample size studies are required to establish the efficacy of such Ayurvedic interventions. These studies will help to standardize the Ayurvedic interventions for iSFN and enable its integration with conventional medicine to provide a more comprehensive and effective approach to managing neuropathic pain. Additionally, further research is needed to explore the mechanisms of Ayurvedic interventions, with a focus on neuroprotection and nerve regeneration. Overall, this case report highlights the potential of Ayurvedic medicine in the management of neuropathic pain.

## Patient perspective

The patient is completely satisfied with the Ayurveda treatment. He got significant improvement after the *panchakarma* therapy. He was dependent on the allopathic drugs and often overdosed the medication so that he could get sleep. After the Ayurvedic treatment, he could stop the allopathic drugs completely. After 8 months of consistent follow-up, there has been no indication of relapse in the severity of the symptoms, and there is no longer a need to rely on allopathic drugs. In addition, there has been a significant improvement in his social life and interpersonal relationships, leading to an overall enhancement in his quality of life.

## Informed consent

Written informed consent was taken from the patient before the treatment and also for publication.

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## Author contributions

Conceptualization, study design, investigation, writing original draft and reviewing: S.Surendran; manuscript reviewing, supervision and administration: M. Goyal.

## Declaration of competing interest

None.

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