



# Navigating the Enigma: A Case Study on Unmasking Idiopathic Small Fiber Sensory Neuropathy in a 69-year-old Patient Amidst a Complex Web of Paresthesia

Shakira Meltan, BA<sup>1</sup>, Alisa White, BA<sup>1</sup>, Nimat Alam, MD<sup>2</sup>

## Abstract

This case report describes one case of idiopathic small fiber sensory neuropathy (ISFSN) in a 69-year-old female with a medical history of hypertension and hyperlipidemia. The patient had symptoms of periodic paresthesia and tingling in her lower extremities, occasional discomfort in the hip and lumbar region, as well as bilateral muscular spasms and rigidity in the calves. Despite numerous treatment modalities, the patient's symptoms exhibited a progressive deterioration, indicating the presence of progressive neuropathy. The absence of an underlying reversible cause was confirmed using laboratory tests, imaging, and electrodiagnostic examinations. The patient exhibited a positive response to the increase in gabapentin dosage administered by her neurologist, subsequently resulting in the identification of the condition as ISFSN. The case study illustrates the complicated aspects of clinical scenarios frequently found in primary care settings, emphasizing the importance of investigating less prevalent diseases when conventional treatment methods fail. This particular case highlights the imperative for further research in ISFSN to identify potentially reversible components and assess the efficacy of various therapeutic approaches.

## Introduction

Neuropathy is defined as nerve damage resulting in the loss of sensation, movement, or other functions. The type of nerve affected determines their classification, which frequently considers nerve size. Small nerve neuropathies encompass a spectrum of conditions that impair the functioning of

nerves smaller than five micrometers, including A-alpha, B, and C fibers. Small nerve neuropathies are frequently observed within the primary care setting as they are associated with common comorbid conditions, including but not limited to type 1 diabetes mellitus, hypertriglyceridemia, chronic alcohol use, hyper- and hypothyroidism, and vitamin deficiencies.<sup>1</sup> It

**Corresponding Author:**

Shakira Meltan, BA TTUHSC School of Medicine  
Lubbock, TX  
Email: Shakira.meltan@ttuhsc.edu

typically presents with a sensation of burning, numbness, and tingling in the distal periphery, which progresses in a length-dependent fashion. This proximal direction of nerve dysfunction is responsible for the frequently described "glove and stocking" distribution pattern. A diagnosis of exclusion, idiopathic small fiber sensory neuropathy is a condition characterized by damage to small sensory nerve fibers of the peripheral nervous system with no clear etiology. Previous studies frequently reported cases of small fiber sensory neuropathy affecting the trigeminal nerve or upper limb. This study presents a unique case of idiopathic small fiber sensory neuropathy with lower limb involvement resembling tarsal tunnel syndrome.

**Case Presentation**

A 69-year-old female patient with a significant medical history of hypertension and hyperlipidemia presented to her primary care physician complaining of intermittent tingling and numbness in her feet for the past 2 to 3 months. She described these symptoms as sporadic, manifesting even during rest and causing significant discomfort that interfered with her walking ability. Over the previous two months, she also complained of stiffness and pain in her hips and lower back, which was made worse by extended periods of standing. She displayed non-tender subcutaneous nodules over her left ankle and right foot during her physical examination. An initial laboratory workup, which included a comprehensive metabolic panel, hemoglobin A1c, and a lipid panel, yielded unremarkable results. She was prescribed naproxen (250 mg twice

daily) and tizanidine (2mg twice daily) to treat presumptive sciatica. During her one-month follow-up, the patient exhibited new-onset hypertension, with systolic blood pressures ranging between 160-180 mmHg. She indicated that the naproxen had somewhat alleviated her hip and leg pains. The physician recommended lifestyle modifications to aid in weight loss and blood pressure control and advised her to continue taking tizanidine as needed for pain management.

Four months into her treatment, the patient reported experiencing new symptoms, including bilateral calf cramping and stiffness, occurring both during movement and at rest. She was prescribed diltiazem (30mg four times daily) to address the cramping. Two months after the initiation of diltiazem, her cramping had entirely resolved. However, she now reported experiencing constant bilateral tingling and numbness in her feet, which worsened at night and disrupted her sleep. Tinel's sign over the tarsal tunnels was absent. Electromyography and nerve conduction studies were ordered to assess the possibility of tarsal tunnel syndrome, along with bilateral foot and ankle X-rays. In response to suspected peripheral neuropathy, the patient was prescribed gabapentin (100mg twice daily). The patient could not undergo electromyography testing but reported mildly improved paresthesia with gabapentin at her 2-month follow-up. She also reported no further episodes of cramping on diltiazem. Six months into her journey, the patient was referred to a neurologist. Nerve conduction studies of her lower extremities returned normal results, with no indications of large fiber neuropathy. Her gabapentin dosage was increased to 300mg twice daily. One-month post-dose increase, the patient reported complete resolution of the paresthesia and numbness in her feet on a regimen of gabapentin

(300mg three times daily) and diltiazem. In conclusion, an extensive one-year workup encompassing laboratory tests, imaging, and electrodiagnostic studies failed to reveal an underlying cause for the patient's sensory symptoms. Her clinical journey, characterized by distal extremity sensory disturbances that responded to gabapentin, is most consistent with idiopathic small fiber sensory neuropathy.

## Discussion

A 69-year-old female patient with a history of hypertension, hyperlipidemia, and morbid obesity (BMI: 41) presented with a constellation of sensory symptoms for over a year. Her condition was characterized by sporadic foot tingling and numbness, hip and lower back pain, and bilateral calf cramping and stiffness. Despite trials of various treatment strategies, the gradual worsening of these symptoms directed the diagnostic process toward exploring less common conditions. Idiopathic Small Fiber Sensory Neuropathy (ISFSN) is frequently characterized by escalating sensory issues in the peripheral nervous system. Small fiber neuropathy is a condition that impacts both the small myelinated A $\delta$ -fibers and the unmyelinated C-fibers.<sup>2</sup> Although the patient's initial symptoms suggested a common medical condition like sciatica, her clinical trajectory, particularly her response to gabapentin, suggested ISFSN.

The patient's subjective ratings of symptom reduction were used to assess the efficacy of various treatments, with gabapentin showing the most significant improvement. Gabapentin and pregabalin are considered the preferred pharmacological options for ISFSN in this patient, given her comorbidities and advanced age. This preference is mostly attributed to the fact that both medications lack significant drug-

drug interactions with other commonly prescribed drugs.<sup>3</sup>

The predominant causes of ISFSN include hereditary, infectious agents, toxic substances, immune-mediated processes, metabolic abnormalities, and idiopathic origins.<sup>2</sup> Small fiber neuropathy has been linked to autoimmune conditions such as celiac disease, connective tissue disorders, monoclonal gammopathy, hypothyroidism, and depression.<sup>4</sup> Moreover, this condition can be triggered by deficiencies in essential vitamins and minerals, such as B12 and copper.<sup>2</sup> Hence, it is crucial to address the fundamental cause, particularly if it is reversible.

Given the potential metabolic aspect of her condition, the patient was additionally counseled to implement lifestyle modifications to facilitate weight reduction and manage blood pressure. In some literature, integrative holistic treatments encompass the utilization of natural supplements, such as alpha-lipoic acid and acetyl-L-carnitine, which have been suggested to mitigate pain and enhance nerve function.<sup>5</sup> Mind-body therapies encompass many practices, such as yoga, meditation, and deep breathing techniques, which have been shown to relieve pain and enhance holistic wellness.<sup>5</sup> The patient's journey highlights the clinical complexity frequently seen in primary care settings. When typical treatment strategies fail, this can help direct healthcare professionals to be open to less prevalent diagnoses. The prompt identification and rapid referral of patients to a neurologist may have led to an earlier diagnosis, hence improving the patient's overall well-being at an earlier point.

## Conclusion

Small fiber sensory neuropathy is a commonly occurring neurologic condition in the geriatric population. Idiopathic neuropathy, however, is a challenging diagnosis of exclusion, given its resemblance to a number of other etiologies of tingling in the lower limbs. One of the critical lessons that can be obtained from this case report is the importance of persistence and flexibility in the diagnosis process, particularly when faced with complex and ambiguous symptoms. Further research is needed to study ISFSN to pinpoint all the possible reversible causes of this debilitating condition.

Potential opportunities for future investigation may encompass exploring the potential correlation between age and the onset of ISFSN, investigating the impact of pre-existing medical conditions such as hypertension and hyperlipidemia, and assessing the efficacy of various therapeutic interventions with specific emphasis on gabapentin in the mitigation of ISFSN symptoms.

### Affiliations:

<sup>1</sup> School of Medicine, Texas Tech University Health Sciences Center, Lubbock

<sup>2</sup> Family Medicine Department, Texas Tech University Health Sciences Center, Permian Basin

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