

An Uncommon Differential of Sciatica

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Abstract

A 61-year-old male presented with sudden onset of acute on chronic lower back and left lower limb pain for the past three days. He reported no specific triggers, denying any focal red flag symptoms and felt systemically well with no urinary or bowel symptoms. He was on long term immunosuppressants (tacrolimus, prednisolone) for a previous renal transplant with no recent medication changes.

On examination, he was afebrile and hemodynamically stable. He was ambulating with a normal gait despite shooting pain in the left leg. There was no spinal or paraspinal tenderness on palpation and the left straight leg raise test was indeterminate. There was pain noted over the left foot but no rashes. The remainder of the neurological exam was unremarkable. The patient was counselled about back pain treatment options.

Introduction

What is the most likely diagnosis, and what are the differentials in this patient?

The provisional diagnosis is sciatica, with differentials including:

- Uraemic neuropathy due to recent end-stage-renal-failure (ESRF)
- Tacrolimus-induced peripheral neuropathy
- Vitamin B12 deficiency

Table 1: Differential diagnoses of lower limb neuropathy in this patient

Uraemic neuropathy ²	Neuropathy is common in patients with ESRF affecting between 60-100% of patients on dialysis. The neuropathy typically manifests more-so in the lower limbs than the upper limbs. Uraemic neuropathy is caused by a raised blood urea level.
Tacrolimus-induced peripheral neuropathy ³	Tacrolimus is an immunosuppressant commonly used in solid organ transplants. It is associated with peripheral neuropathy with multiple cases reported involving extremity weakness. Tacrolimus induced neuropathy is caused via demyelination of the nerves.
Vitamin B12 deficiency ⁴	Vitamin B12 deficiency is a common cause of peripheral neuropathy in the elderly. There are multiple causes for B12 deficiency including chronic kidney disease (CKD) and malabsorption disorders. In CKD patients, Vitamin B12 absorption is reduced due to increased transcobalamin losses in the urine.

He returned the following day (Day 2) with a rash that erupted on the plantar surface of his left foot. With a provisional diagnosis of impetigo, he was treated with co-trimoxazole 800mg/160mg. He re-presented on Day 3 with worsening left calf pain with features of hyperalgesia triggered by light touch. Clinical examination revealed a clustered vesicular rash on the left plantar surface (Figure 1a) leading to an impression of vesicular dermatitis and calf hyperalgesia secondary to sciatica.

He re-presented on Day 4 with worsening pain. At this stage, his rash had spread along the S1 dermatome (Figure 1b). Shingles was considered after further questioning revealed that he had varicella as a child (Varicella IgG reactive, IgM non-reactive), which was subsequently confirmed by viral PCR. He was started on famciclovir, amitriptyline and paracetamol when required [1-4].

Sciatica	The annual incidence of sciatica is between 1% and 5%. It is commonly associated with patients in their fourth decade of life. It does not discriminate between genders and is more common in industrial workers exposed to awkward positioning.
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Figure 1: Clinical photo of plantar surface of left foot showing clustered vesicles on Day 3 (a), spreading along the lateral aspect of the left foot on Day 4 (b).

What is the typical distribution of shingles?

Herpes zoster typically affects 1-2 adjacent thoracic or lumbar dermatomes (T3-L3) and rarely crosses the midline [5]. Figure 2 demonstrates the segmental distribution of herpes zoster in a recent epidemiological study [6]. Sacral herpes zoster is rare, commonly involving dermatomes S2-S4, which is responsible for motor and sensory control of the bladder [7].

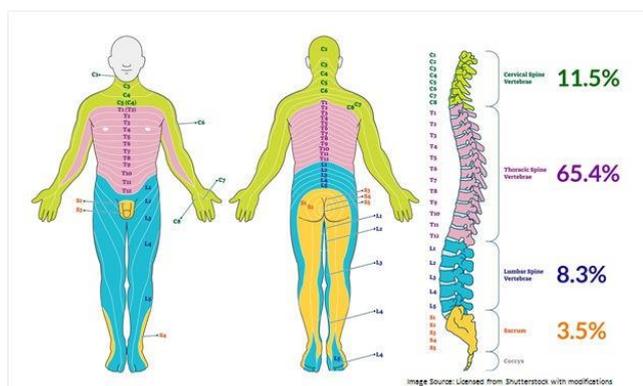


Figure 2: Frequency of segmental distribution of herpes zoster.

What is the incidence of shingles among immunocompromised patients?

Immunocompromised patients are up to 9 times more likely to develop shingles [8,9]. It may present bilaterally, across multiple dermatomes, or with visceral involvement. These patients have a higher risk of morbidity and mortality due to shingles.

Three days later (Day 10), he presented with urinary retention and a palpable bladder, and was referred to the Emergency Department where blood tests revealed an acute kidney injury (AKI) with creatinine 191 (baseline 125). A bedside ultrasound scan confirmed approximately 1500mL of urine in the bladder, which was promptly emptied with the insertion of an indwelling catheter. He was admitted with a post-renal AKI secondary to acute urinary retention.

What are the complications of shingles?

The most common long-term complication of shingles is post-herpetic neuralgia (PHN) occurring in 13% of patients above 50

Years [10]. The risk increases with age, immunosuppression, and delay in initiating antiviral treatment [10]. PHN is a continuous burning pain with hyperalgesia of the affected dermatomes for three or more months after onset. It is typically treated with tricyclic antidepressants, pregabalin and 5% lidocaine patches with mixed success [10]. Since PHN can be debilitating, initiating antiviral therapy within 72-hours of rash onset is crucial.

Almost 30% of sacral zoster cases present with visceral complications, including urinary dysfunction (dysuria, urinary retention, or incontinence) potentially requiring catheterization. [11].

The sacral nerves control the micturition pathway. When herpes zoster affects the sacral nerve roots, it may cause detrusor muscle weakness leading to urinary retention.

Discussion/conclusion

This case represents an interesting diagnostic dilemma, as evidenced by the multiple presentations and diagnoses proposed for the same patient within one week. Since neuropathic pain often precedes the characteristic herpetiform rash, herpes zoster can be easily missed early in the disease progression in favour of more common presentations. However, shingles is an important diagnosis not to be missed because of the 72-hour window of opportunity to begin antiviral treatment. Early initiation of treatment is crucial to prevent debilitating complications such as post-herpetic neuralgia that have a high burden of disease.

Key points

- Herpes zoster should be considered in immunosuppressed patients presenting with sciatica
- Sacral herpes zoster can present with urinary dysfunction (including acute urinary retention, dysuria, and incontinence)
- Detection and treatment of shingles within 72 hours of rash onset is crucial to prevent long-term complications

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