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Rare presentation of gout as radial nerve neuritis: A case report

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Abstract

Introduction: Gout is a metabolic disorder caused by hyperuricemia and deposition of monosodium urate (MSU) crystals. While joint inflammation is the hallmark of gout, extra-articular manifestations, such as nerve involvement, are extremely rare. Radial nerve neuritis as a presentation of gout is a unique and underreported phenomenon.

Case Presentation: A 75-year-old male presented with a one-month history of burning and pricking pain in the left forearm and multiple joint swellings over few years. Clinical examination revealed multiple tophaceous nodular swellings over the left forearm, left ankle, and right elbow, with sensory deficits suggestive of radial nerve involvement. Laboratory investigations showed hyperuricemia (serum uric acid: 7.5 mg/dL) and elevated CRP (2.4 mg/dL). Radiological imaging demonstrated periarticular erosions, and histopathology of excised tophi confirmed monosodium urate crystals.

Intervention: The patient underwent surgical excision of tophi from the left ankle and right elbow under regional anesthesia. Medical therapy included febuxostat (40 mg BD) for urate-lowering, analgesics for pain management, and dietary modifications. Postoperative care involved wound management and regular follow-up.

Outcome: The patient showed marked improvement, with complete resolution of radial nerve neuritis symptoms and significant relief from joint pain. Follow-up after two weeks revealed no recurrence of symptoms and improved range of motion in the affected joints.

Conclusion: This case highlights the rare presentation of gout as radial nerve neuritis, emphasizing the importance of recognizing atypical manifestations. Early detection and intervention, can effectively resolve symptoms and prevent long-term complications. This report explains the need for a detailed clinical examination to manage such rare and complex cases.

Keywords: Gout, hyperuricemia, monosodium urate crystals

Introduction

Gout is a metabolic disorder resulting from the deposition of urate crystals, primarily in peripheral joints. It is often associated with lifestyle factors, such as excessive alcohol consumption and a purine-rich diet. Typical presentations include acute monoarthritis or chronic tophaceous gout affecting joints like the first metatarsophalangeal joint, knees, or elbows. Neurological complications, however, are rare and typically secondary to mechanical compression caused by tophi.

Tophi can form in various anatomical locations, including soft tissues, tendons, bursae and even neural structures, causing localized inflammation, nerve compression, and, in rare cases, neuritis. Radial nerve involvement in gout is exceedingly uncommon and can lead to sensory deficits, pain, and impaired function in the hand and forearm. This case highlights an unusual presentation of gout as radial nerve neuritis, illustrating the importance of considering gout in the differential diagnosis of peripheral neuropathic pain. Early diagnosis and tailored management are crucial to improving patient outcomes in such rare presentations.

Case History and Clinical Findings

A 75-year-old male agricultural laborer presented with a one-month history of burning and pricking pain in the left forearm, along with progressive swelling and sensory deficits. The patient also reported multiple joint swellings over the past few years, predominantly in the elbows, left ankle, and toes.

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Key History**Chief Complaints**

- Neuralgic pain in the left forearm for one month.
- Multiple joint swellings over few years, starting in the right toes and progressing to the bilateral elbows and left ankle.

Past History

- Chronic alcohol consumption (90–180 mL/day) for 40 years.
- Diabetes and hypertension, both diagnosed three months ago and controlled with metformin and telmisartan.

Symptom Onset

- Initial asymptomatic period followed by joint pain and swelling, particularly involving the left forearm and hand, paraesthesia over left forearm.
- Two spontaneous ruptures of tophi on the second and third toes healed with scarring.

Examination**General Examination**

- Vital signs were stable (BP: 130/70 mmHg, PR: 80 BPM, afebrile).
- Well-nourished and moderately built.

Local Examination**Left Forearm**

- Nodular swelling (5×5 cm), firm in consistency over posterior aspect of left elbow and reduced range of motion.
- Sensory deficits on posterior aspect of forearm and dorsum of hand.

Left Ankle and Right Elbow

Lobular, nodular swellings with overlying skin changes indicative of tophi.

Resolved Toes

Healed tophi with scarring over the second and third toes of left foot.

Investigations

- Elevated serum uric acid (7.5 mg/dL) and CRP (2.4 mg/dL).
- X-rays showing periarticular erosions and soft tissue swelling.
- USG reveals hypoechoic soft tissue mass just proximal to Arcade of Frohse causing mild abutment of radial nerve in left elbow.
- MRI left elbow – diffuse synovial thickening with mild synovial effusion,
- Large erosions involving distal humerus and proximal ulna
- Multiple osseous loose bodies in the joint and olecranon bursa
- f/s/o infective /inflammatory arthritis
- Olecranon bursitis
- Radial nerve in distal arm and in radial tunnel appears normal.
- Edema of ulnar nerve in cubital tunnel



Fig 1: Clinical Presentation of Tophaceous Gout Affecting Radial Nerve and Ankles

The figure 1 shows advanced tophaceous gout in a 75-year-old male. The left panel shows nodular swellings in fingers. The right panel highlights a large, lobulated swelling over the left ankle, characteristic of chronic tophi deposition with stretched, discolored skin.



Fig 2: Advanced Tophaceous Gout with Multiple Joint Involvements

The left panel shows tophus of left elbow, while the right panel highlights severe toe deformities with residual tophi, discoloration and healed scars. These findings demonstrate advanced polyarticular gout with systemic joint involvement.



Fig 3: Radiological Findings in Tophaceous Gout

This radiological investigation in the figure 3 shows the structural changes associated with advanced gout: A) Left Panel (Right Elbow X-ray): Significant periarticular soft tissue swelling. Evidence of tophaceous deposits with joint space narrowing, characteristic of gouty arthritis. B) Middle Panel (Left Ankle X-ray): Lobulated, soft tissue mass over the lateral malleolus indicative of a large tophus. Narrowing of joint space with periarticular erosion and soft tissue swelling. C) Right Panel (Hand X-ray): Multiple erosions at proximal interphalangeal and joints with surrounding soft tissue involvement in index and middle finger, CMC joint of thumb, Advanced changes suggest chronic tophaceous deposits.

Management**Medical management,**

the patient was put on:

1. Febuxostat (40 mg PO BD) for hyperuricemia.
2. Goutinil (0.5 mg PO OD) to manage inflammation.
3. Analgesics (Acelofenac) for pain relief.

4. Dietary and lifestyle modifications, including alcohol cessation and reduced purine intake.

Surgical Intervention

The patient underwent excision of tophi from the left ankle and right elbow under regional anesthesia. The surgical approach included:

- Careful dissection to remove well-demarcated, chalky, lobular deposits of urate crystals without damaging surrounding soft tissues or neural structures.
- Meticulous irrigation to ensure no residual urate deposits remained, reducing the likelihood of recurrence.
- Postoperative care focused on managing inflammation with analgesics and wound care to ensure optimal healing.
- Histopathology of excised tissue confirmed the presence of monosodium urate crystals, consistent with gouty tophi. Polarized microscope revealed negatively birefringent needle shaped sharp crystals.

The surgery was uneventful, with no intraoperative difficulties. The patient demonstrated significant improvement in joint mobility and pain relief during the postoperative period. Notably, sensory deficits associated with radial nerve compression resolved, highlighting the importance of early surgical intervention in cases of nerve involvement.



Fig 4: Intraoperative Findings of Tophaceous Gout

Figure 4 shows the surgical challenges of removing large tophi to alleviate mechanical compression and restore joint function. Complete excision is crucial to prevent recurrence and complications such as nerve compression, as seen in this patient with radial nerve involvement.



Fig 5: Histopathological Evidence of Gouty Tophi

The figure 5 histopathology slides demonstrates key findings characteristic of gouty tophi:

A) Polarized microscopy reveals negatively birefringent needle-shaped monosodium urate (MSU) crystals, a hallmark of gout. The needle-like structures indicate deposition of urate crystals in the excised tissue. B) Non-polarized microscopy highlights chalky white deposits of MSU crystals surrounded by amorphous material, reflecting chronic crystal accumulation. C) Hematoxylin and eosin (H&E) stain shows an inflammatory response with fibrous tissue encasing urate crystals. Presence of foreign-body giant cells and granulomatous inflammation surrounding the deposits suggests chronic tissue reaction to urate crystals.

Medical Therapy

Post-surgery, the patient was continued:

1. Febuxostat (40 mg PO BD) for hyperuricemia.
2. Goutinil (0.5 mg PO OD) to manage inflammation.
3. Analgesics (Acelofenac) for pain relief.
4. Dietary and lifestyle modifications, including alcohol cessation and reduced purine intake.

Discussion

Gouty arthritis with extra-articular involvement, particularly radial nerve neuritis, is a rare phenomenon. The pathophysiology of nerve involvement in gout includes mechanical compression by tophi, inflammatory neuritis, or direct deposition of urate crystals in neural tissue. Radial nerve neuritis presents as burning or pricking pain, sensory impairment as observed in this case.

The diagnostic challenge lies in differentiating gout-related neuropathy from other causes, such as diabetic neuropathy or mechanical compression unrelated to gout. Serum uric acid levels, imaging studies, and histopathology of tophi remain critical for diagnosis.

Importance of Early Surgical Intervention:

- In cases of nerve involvement, medical management alone may not suffice, as mechanical compression by tophi can lead to irreversible nerve damage.
- Early surgical excision of tophi, as performed in this case, provides immediate decompression, alleviates symptoms, and prevents permanent neurological sequelae.

Therapeutic Considerations

- Febuxostat, a selective xanthine oxidase inhibitor, is preferred in managing chronic hyperuricemia and preventing further tophaceous deposits.
- Lifestyle modifications, including alcohol cessation and dietary restrictions, are integral to long-term management.

This case underscores the importance of considering gout in patients presenting with peripheral neuropathy, especially when accompanied by joint swellings and elevated uric acid levels. While rare, early recognition and timely intervention can lead to excellent outcomes, as demonstrated by the resolution of radial nerve neuritis in this patient.

Conclusion

This case shows a rare manifestation of gout as radial nerve neuritis, successfully managed with febuxostat therapy and surgical intervention. It emphasizes the importance of a multidisciplinary approach, combining medical and surgical strategies, to achieve optimal outcomes. Early recognition of atypical presentations of gout is crucial to prevent long-term disability and improve quality of life.

Conflict of Interest

Not available.

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