


# Atypical Gout Presentation: A Case Report

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## Abstract

**Background:** Gout is a common inflammatory arthritis caused by monosodium urate crystal deposition and classically presents as acute monoarthritis of the first metatarsophalangeal joint. However, atypical presentations involving unusual joint distributions, normouricemia, and misleading imaging findings can pose significant diagnostic challenges and lead to delayed or inappropriate management. **Case Presentation:** We report the case of a 54-year-old male with no significant comorbidities who presented with recurrent episodes of severe lateral foot pain over 18 months. Imaging revealed recurrent stress fractures involving the third and fourth metatarsals, while inflammatory markers and serum uric acid levels remained within normal limits during acute episodes. Despite orthopedic recommendations for prolonged immobilization and surgical stabilization, the patient experienced complete symptom resolution following dietary purine restriction and escalation of urate-lowering therapy with allopurinol, achieving sustained low serum uric acid levels. **Conclusion:** This case highlights an atypical presentation of gout masquerading as recurrent metatarsal stress fractures in the absence of hyperuricemia or classic radiographic findings. Clinicians should maintain a high index of suspicion for gout in patients with episodic, severe foot pain and unexplained stress fractures, as early recognition may prevent unnecessary surgical interventions and prolonged morbidity.

## Keywords

Gout, Atypical Gout, Normouricemic Gout, Stress Fractures, Metatarsal Fractures, Urate-Lowering Therapy

## 1. Introduction

Gout is a metabolic disorder characterized by hyperuricemia resulting from in-

creased uric acid production or decreased renal excretion. Deposition of monosodium urate (MSU) crystals within joints triggers an inflammatory response that may present as acute flares or chronic arthropathy [1] [2]. The classic presentation involves sudden-onset monoarthritis, most commonly affecting the first metatarsophalangeal (MTP) joint, a presentation known as podagra [3]. Diagnosis is typically clinical but can be confirmed through synovial fluid analysis demonstrating negatively birefringent MSU crystals under polarized microscopy [4].

Although gout is traditionally associated with hyperuricemia and monoarticular involvement, these features are not universally present. Increasing evidence demonstrates that gout may present in a wide spectrum of atypical forms, including polyarticular involvement, normouricemic states, unusual anatomical locations, and extra-articular manifestations [3] [5]. These atypical presentations often complicate diagnosis and may lead to delays in appropriate management.

Normouricemic gout is well documented, with studies demonstrating that a substantial proportion of patients may have normal serum uric acid levels during acute flares [6]. Polyarticular gout flares may resemble systemic infections or sepsis-like syndromes [7]. Cutaneous and subcutaneous manifestations, including tophaceous deposits and nodular lesions, may mimic dermatologic or autoimmune conditions [8] [9]. A growing body of literature has characterized gout as a “great mimicker,” capable of presenting as infectious, neoplastic, or mechanical conditions [10].

Gout has also been reported in atypical anatomical locations, including the shoulder, spine, and midfoot, where it may present with destructive or lytic lesions that resemble malignancy or degenerative disease [10] [11]. These presentations frequently result in extensive diagnostic evaluations and inappropriate management strategies.

Given the broad spectrum of atypical manifestations, maintaining a high index of suspicion is essential. This case report describes an unusual presentation of gout manifesting as recurrent inflammatory pain and stress fractures involving the lateral metatarsals (third through fifth metatarsals) in the absence of hyperuricemia or classic radiographic findings. In addition, we provide a review of the literature to contextualize this presentation within the expanding spectrum of atypical gout manifestations.

## 2. Case Presentation

A 54-year-old Pakistani male with a past medical history significant only for allergic rhinitis treated with fexofenadine 180 mg daily and an overweight status presented with recurrent episodes of severe lateral left foot pain involving the lateral metatarsals over approximately 18 months. The pain had a rapid onset, reached peak intensity within several hours, and typically resolved within one week. During acute episodes, the patient was unable to bear weight and required corticosteroid injections for symptomatic relief.

The patient denied alcohol use, tobacco use, recent trauma, repetitive athletic

activity, or occupational overuse. He denied a family history of gout, inflammatory arthritis, or metabolic bone disease. Renal function remained within normal limits throughout evaluation, and the patient was not taking diuretics or other medications associated with hyperuricemia. Prior to dietary modification, the patient reported a diet rich in red meat and purine-containing foods.

During an acute flare prior to corticosteroid injection, laboratory evaluation including erythrocyte sedimentation rate (ESR), C-reactive protein (CRP), rheumatoid factor (RF), anti-cyclic citrullinated peptide (anti-CCP) antibodies, and serum uric acid was obtained and remained within normal limits. Serum uric acid at that time measured 6.0 mg/dL.

Magnetic resonance imaging (MRI) demonstrated a stress fracture involving the third metatarsal (**Figure 1**). Clinical examination during acute flares demonstrated erythema, swelling, and inflammation of the affected foot (**Figure 2**). Plain radiographs of the left foot later demonstrated mild soft tissue swelling and a subtle hairline fracture involving the fifth metatarsal without classic erosive gout findings (**Figure 3**).

Repeat MRI obtained two months later demonstrated progression of the third metatarsal stress fracture with new stress fracture involvement of the fourth metatarsal. Surgical stabilization was subsequently recommended; however, the patient declined operative intervention.

Several diagnostic considerations were evaluated. Recurrent mechanical stress injury was initially favored based on imaging findings; however, the episodic inflammatory nature of symptoms, absence of repetitive overuse or trauma, and subsequent response to urate-lowering therapy made an isolated mechanical etiology less likely. Infection was considered unlikely given persistently normal inflammatory markers and lack of systemic infectious symptoms. Calcium pyrophosphate deposition disease and seronegative inflammatory arthritis were also considered less likely based on clinical presentation and imaging findings.

Synovial fluid aspiration was not performed because no accessible joint effusion was present during evaluation. Musculoskeletal ultrasound and dual-energy computed tomography (DECT) were considered but not pursued due to the patient's clinical improvement following dietary modification and urate-lowering therapy. Therefore, the diagnosis remained clinical and was supported by the episodic inflammatory presentation, exclusion of alternative etiologies, and sustained response to treatment.

The patient initiated strict dietary purine restriction and was started on allopurinol 300 mg daily. Following treatment initiation, serum uric acid levels progressively decreased, and the dose was subsequently titrated to 600 mg daily to maintain serum uric acid levels at or below 3.0 mg/dL. The patient subsequently experienced complete resolution of symptoms without recurrent flares. Repeat imaging was deferred given complete clinical resolution.

### 3. Discussion

Gout classically presents as an acute monoarticular inflammatory arthritis, most

commonly affecting the first metatarsophalangeal joint (podagra). However, atypical presentations involving unusual joint distributions, normouricemic states, and misleading imaging findings are increasingly recognized and can result in diagnostic delay [3] [5]. The present case illustrates an uncommon manifestation of gout presenting with recurrent stress fractures involving the lateral metatarsals, without classic laboratory or radiographic findings.

Although chronic gout is known to cause erosive bone changes, its relationship with fracture risk remains incompletely understood. Persistent monosodium urate (MSU) crystal deposition may lead to chronic inflammation, osteoclastic activation, and structural bone weakening, potentially predisposing to fractures [1]. Reported cases of gout-associated fractures have primarily involved larger weight-bearing bones such as the femur, patella, and tibia [7]. In contrast, involvement of the lateral metatarsals, as observed in this case, is rarely reported.

A growing body of literature highlights gout as a “great mimicker,” capable of presenting as osseous lesions, fractures, or neoplastic processes [10]. In this case, magnetic resonance imaging demonstrated a stress fracture involving the third metatarsal (Figure 1), which initially supported a mechanical etiology. However, the recurrent nature of the fractures and absence of clear precipitating trauma raised concern for an underlying pathological process. Similar presentations have been described in the literature, including intraosseous gout presenting as a tibial plateau fracture associated with a lytic lesion, often mistaken for malignancy [12].

Clinical examination during acute flares demonstrated erythema, swelling, and inflammation of the affected foot (Figure 2), consistent with an inflammatory process rather than a purely mechanical injury. Similar diagnostic challenges have been described in cases where gout mimics infectious or inflammatory soft tissue conditions [8] [9].

Radiographic findings in chronic gout classically include “punched-out” erosions with sclerotic margins and soft-tissue tophi [11]. However, these findings were notably absent in this patient’s imaging. Plain radiographs demonstrated only a subtle hairline fracture involving the fifth metatarsal without characteristic erosive abnormalities (Figure 3). Instead, imaging findings were interpreted as stress fractures, leading to orthopedic management recommendations including prolonged immobilization and consideration of surgical stabilization.

Beyond laboratory variability, gout may present with systemic or misleading clinical syndromes. Polyarticular gout flares may mimic sepsis, with fever, leukocytosis, and systemic inflammatory response, often leading to unnecessary antibiotic therapy [7]. Cutaneous and soft tissue manifestations, including nodular lesions and tophi, may resemble dermatologic or autoimmune conditions [8] [9] [13]. Additionally, atypical cases of tophaceous gout have been reported in the absence of hyperuricemia or inflammatory symptoms, further highlighting the diagnostic challenges associated with atypical gout presentations [14].

The patient’s complete resolution of symptoms following strict dietary purine restriction and escalation of urate lowering therapy strongly supports gout as a

significant contributor to the clinical presentation. Sustained symptom control after achieving and maintaining low serum uric acid levels further reinforces the diagnosis. However, whether gout directly caused the metatarsal abnormalities, contributed to localized bone vulnerability, or coexisted with true mechanical stress fractures remains uncertain. This distinction highlights the diagnostic complexity of atypical gout presentations and the limitations of establishing causality in the absence of crystal confirmation or advanced gout specific imaging.

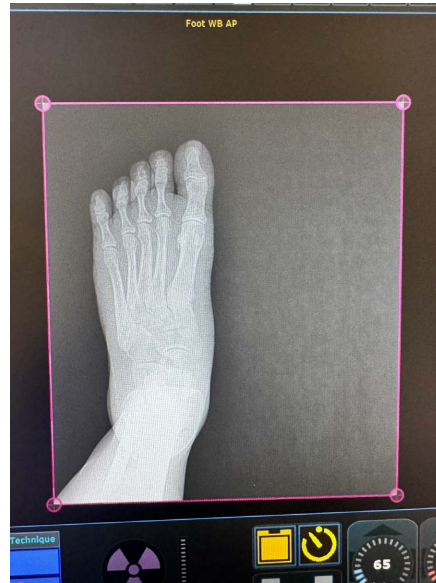
This case underscores the importance of maintaining a high index of suspicion for gout, even in the absence of classic features such as podagra, hyperuricemia, or characteristic radiographic changes. Early recognition of atypical presentations may prevent unnecessary surgical interventions, prolonged morbidity, and inappropriate treatment strategies. Clinicians should consider gout in the differential diagnosis of recurrent foot pain and stress fractures, particularly when symptoms respond dramatically to urate lowering therapy.



**Figure 1.** MRI of the left foot demonstrating stress fracture involving the third metatarsal.



**Figure 2.** Clinical photograph obtained during an acute flare demonstrating erythema, swelling, and inflammation of the lateral left foot.



**Figure 3.** Plain radiograph of the left foot demonstrating a subtle hairline fracture involving the fifth metatarsal without classic erosive gout findings abnormalities.

#### 4. Conclusion

This case highlights an atypical presentation of gout manifesting as recurrent lateral metatarsal stress fractures in the absence of hyperuricemia, elevated inflammatory markers, or classic radiographic findings. Normal serum uric acid and inflammatory markers should not exclude the diagnosis of gout, particularly in patients with episodic, severe inflammatory pain and response to urate lowering therapy. Recognition of such atypical presentations is critical to avoid diagnostic delay, unnecessary surgical interventions, and prolonged morbidity. Clinicians should maintain a high index of suspicion for gout when evaluating recurrent foot pain or stress fractures of unclear etiology.

#### Consent

Written consent was obtained from the patient for publication of this case report and accompanying images.

#### Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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