Spinal gout

Peter Xie, Zhaoyi Si, Steven Tu, Jason Sines, Gamshagi Karunaivel, David Martens

CASE

A Polynesian man aged 30 years presented to his general practitioner (GP) with atraumatic lower back pain for the last 2 days. His comorbidities include type 2 diabetes (HbA1c 6.6%) managed with lifestyle modifications and a history of recurrent gout flares previously treated with prednisone. There was a family history of gout from the patient's father. The patient was not on regular medications. There was no history of intravenous drug use (IVDU), difficulty passing urine, weight loss, fevers or nocturnal pain. On examination there was thoracolumbar spinal and paraspinal tenderness. Tophi were noted on both hands. Strength in the lower limb muscles was 5/5 with normal range of movements. Straight leg raise was negative. Wall-to-occiput distance was 0 cm. Modified Schober's test was >5 cm. Clinically the presentation seemed consistent with mechanical back pain and the patient was treated with simple analgesia, referred for physiotherapy and advised to review in 1 week.

Over the next 3 days his back pain worsened, and he developed new painful joints. He presented to the emergency department and was found to have painful and swollen right wrist and right knee. He was febrile at 39 degrees. Investigations revealed elevated white cell count 24.1×10^9/L (reference interval [RI], $4–10 \times 10^9$/L). C-reactive protein (CRP) elevated at 577 mg/L (RI, <5 mg/L). Liver and renal function were normal. His urate was 0.47 mmol/L (RI, 0.2–0.42 mmol/L). Blood culture was negative. An aspirate of the swollen right knee showed white cell count $85{,}800 \times 10^6$/L suggestive of an inflammatory or infective process. Sodium urate crystals were visualised confirming gout. The sample was negative on culture for bacterial growth.

CT scan of whole spine and abdomen pelvis showed no fractures, vertebral lesions or deeper source of infection such as epidural abscess or prostate abscess. The sacroiliac joints showed asymmetrical erosions, joint space irregularity and subchondral cysts consistent with sacroiliitis (Figure 1). As bilateral asymmetrical sacroiliac changes are uncommon in ankylosing spondylitis, a provisional diagnosis of axial gout was made. The patient was commenced on urate lowering therapy (ULT) allopurinol, prednisone and colchicine for acute polyarticular gout. His inflammatory markers improved to CRP 53 mg/L over 3 days, and he defervesced. He was discharged with a plan to remain on allopurinol and prophylactic prednisone. He re-presented after 2 months with polyarticular gout flare in the context of self-ceasing medications and low mood. He was treated with prednisone and reviewed by a dietitian and mental health team. He is due for follow-up in the gout clinic for further patient education and ULT titration.

QUESTION 1

What are the differentials for back pain and fever?

QUESTION 2

What urate levels would you aim for to optimise gout management?

QUESTION 3

Why is it important to consider the patient's ethnicity when commencing ULT?

QUESTION 4

How would you prevent gout flares when commencing ULT?

ANSWER 1

Spinal infection, inflammatory arthritis, malignancy and vertebral fractures are potential serious causes of lower back pain and fever. Spinal infection is an important diagnostic differential in this young man with back pain and fever. While this patient had no history of IVDU and initial microbiological investigations (blood cultures and joint aspirate) were negative, further imaging with MRI spine or bone scan would be warranted if clinical improvement was slow or if cultures subsequently returned positive results. While spinal involvement is uncommon in gout, the presence of characteristic joint involvement in a patient with known gout should raise clinical suspicion for axial gout. Acute polyarticular gout flares can cause high fevers and raised inflammatory markers making it difficult to distinguish from infection.

Another differential is spondyloarthritis (including ankylosing spondylitis), which usually presents before the age of 45 years. The classical features include inflammatory back pain persisting over weeks to months and might be accompanied by extra-articular manifestations. While malignancy is

unlikely in this young patient lacking typical risk factors, unexplained fever warrants consideration of malignancy.

Important clinical considerations relevant to each differential diagnosis are presented in Table 1.

ANSWER 2

Guidelines from most rheumatological societies strongly recommend adopting a treat-to-target strategy in patients on ULT. Higher urate levels at baseline increase risk of gout flares.[1] Reducing urate levels reduces risk and severity of gout flares and tophi size. As per the electronic therapeutic guidelines (eTG) the recommended target serum urate for patients with non-tophaceous gout is <0.36 mmol/L (6 mg/dL). For patients with tophi, chronic gouty arthropathy or frequent attacks, a stricter target of <0.3 mmol/L (5 mg/dL) is recommended.[2] Urate levels should be monitored monthly when up-titrating ULT. Once target urate level is achieved, urate should be measured at 6 months and then annually. ULT can be initiated during acute gout flares and should be continued lifelong if well-tolerated.

Radiographic features suggestive of gouty arthropathy are presented in Table 2.[3] Bony erosions typically occur 15 years after disease onset.[4] The presence of tophi is strongly correlated with erosive disease. The reported prevalence of spinal gout varies from 7 to 35% of people with gout.[5,6]

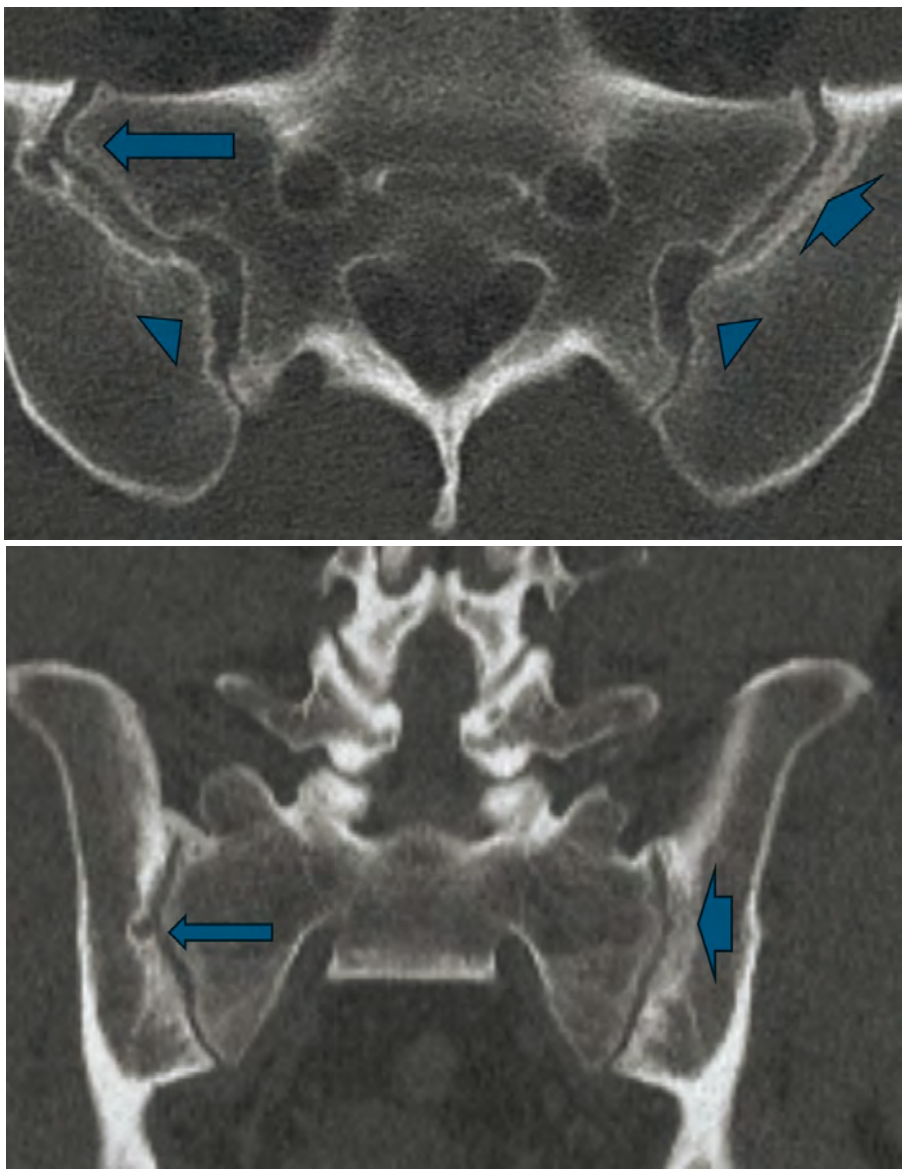

Figure 1. CT scan sacral-lumbar spine axial view (top) and coronal view (bottom). Long arrow: Erosion with punched-out appearance; Short arrow: Irregularity along sacroiliac joint; Arrowhead: Sclerosis.

ANSWER 3

The patient's ethnicity is an important consideration when initiating ULT because of the strong association between *HLA-B*5801* allele and allopurinol hypersensitivity syndrome (AHS) and allopurinol induced severe cutaneous adverse reactions (SCARs) including Stevens–Johnson syndrome (SJS), toxic epidermal necrolysis (TEN) and drug reaction with eosinophilia and systemic symptoms (DRESS). While *HLA-B*5801* testing is strongly recommended in populations with a high allele frequency such as Han Chinese (6–8%), Korean (12%) and Thai (6–8%), testing should also be considered in the Pacific-Islander population who show an increased risk of SCARs.[7,8] This is particularly relevant given the increasing number of migrants and international students from high-risk regions. Febuxostat should be considered as ULT if *HLA-B*5801* is detected. *HLA-B*5801* testing is done through hospitals and pathology companies. Currently Medicare rebate is not available to patients tested in the community.

ANSWER 4

Initiating or up-titrating ULT can precipitate gout flares. eTG recommends flare prophylaxis with colchicine, non-steroidal anti-inflammatory or prednisone for all patients initiating or adjusting ULT.[2] Patients are less likely to adhere to ULT if they have flares, especially during the initiation period. A typical prophylaxis regimen is colchicine 500 mcg daily or low dose prednisone (≤ 5 mg daily) for 3–6 months.

Patients should be educated on the importance of medication adherence, including being asked to review with a GP

Table 1. Differential diagnosis and considerations for the differential

Differential diagnosis	Comment
Malignancy • Primary • Secondary	• The sudden onset pain is not consistent with malignancy unless a pathological vertebral fracture was the cause of the pain
Inflammatory arthritis • Axial spondyloarthritis – Ankylosing spondylitis (AS) • Crystal arthritis – Gout – Pseudogout	• Extra-articular manifestations such as skin plaques, uveitis or nail changes could suggest a spondyloarthritis • The sudden onset pain and worsening with movement is not typical of axial spondyloarthritis • While rare, gout can affect the spine and the development of pain in other joints should prompt consideration of this diagnosis
Infection • Spondylodiscitis – Bacterial/fungal/tuberculosis • Psoas abscess • Infective aortitis	• Further imaging would be indicated in this case because of the presence of fever • Imaging modalities for spinal infection should include the whole spine • Modalities of imaging include CT scan, MRI and nuclear medicine bone scan
Vertebral fracture • Osteoporotic fracture • Pathological fracture	• An osteoporotic fracture is unlikely in a patient of his age, although he did have risk factors such as prednisone use • A pathological vertebral fracture could be a sign of an underlying malignant or infective process and should prompt further work-up

Table 2. Radiographic findings of gout[4]

Peri-articular bone mineralisation is normal, unlike rheumatoid arthritis
Periosteal reaction/new bone formation
Asymmetric soft tissue swelling ± intra-osseous mass (tophus)
Erosions with sclerotic or overhanging margins
Joint space is preserved (until late in disease)

if there are symptoms of acute gout flare. Consider referring the patient to a dietician to promote weight loss and for dietary education focusing on avoiding foods that can trigger gout, such as those high in purine.

Key points

- Current Australian guidelines suggest adopting a treat-to-target strategy that involves reducing serum urate level to <0.36 mmol/L or <0.3 mmol/L if there is evidence of tophi, chronic arthropathy or recurrent flares.
- Consider *HLA-B*5801* allele testing in high-risk groups and be aware of the potential for allopurinol induced severe adverse skin reactions.
- Be aware of the potential for gout to involve joints of the axial skeleton such as the sacroiliac joint.

Authors

Peter Xie BMed, MD, Rheumatology Department, Liverpool Hospital, South Western Sydney, NSW

Zhaoyi Si MBBS, PhD, FRACGP, General Practitioner, Campsie Family Medical Centre, Sydney, NSW

Steven Tu BBiomedSc, MD, FRACP, Rheumatologist, Rheumatology Department, Liverpool Hospital, South Western Sydney, NSW

Jason Sines BMed, MD, FRACP, Rheumatologist, Rheumatology Department, Liverpool Hospital, South Western Sydney, NSW

Gamshagi Karunaivel MBBS, Rheumatology Department, Liverpool Hospital, South Western Sydney, NSW

David Martens MBBS, BAppSc, FRACP, Rheumatologist, Rheumatology Department, Liverpool Hospital, South Western Sydney, NSW

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Correspondence to:
peter.xie2@health.nsw.gov.au

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correspondence **ajgp@racgp.org.au**