Medical Cases:
GOUT
Case Study

Peter is a 41 year-old African-American male who presented to your clinic two days ago complaining of awakening with severe, 8 out of 10 left knee pain, erythema and swelling three days prior. Peter states the pain was “in and all around the joint area.” Peter denied being able to ambulate without his wife’s assistance and stayed home from work as a teacher. He thought he “overdid it” playing with his kids. The pain persisted throughout the day despite taking two OTC NSAID tablets. The pain mostly subsided by the next morning. Peter states he had a similar episode of sudden onset pain upon waking in the morning in his right great toe, but thought he stubbed his toe. He denies injury, fever, rash, chills or decreased ROM.

**Peter at a Glance**
- Height: 5’11”
- Weight: 239 lbs
- History of hypertension
- Takes 25 mg HCTZ a day
- Reports drinking beer on most weekends

**Vitals upon exam:**
- Temp: 98.8°F
- HR: 79 bpm
- BP: 136/78
- Resp: 17

Is It Gout?

Based on Peter’s presentation, you suspect he may be experiencing an acute gout flare. Sometimes referred to as the “disease of kings,” gout is a rheumatic disease resulting from uric acid crystal (monosodium urate) deposits in tissues and fluids within the body. Though gout is caused by hyperuricemia, they are not the same condition and asymptomatic hyperuricemia does not require treatment.

The most common form of inflammatory arthritis among men, gout may remit for extended periods of time and then flare for days to weeks or may become chronic.

Certain health conditions and medications may put patients at risk for hyperuricemia or gout.

**Health Conditions**
- Renal insufficiency
- Hypertension
- Hyperthyroidism
- Psoriasis
- Hemolytic anemia
- Kelley-Seegmiller syndrome
- Lesch-Nyhan syndrome

**Medications**
- Diuretics
- Salicylate containing drugs
- Niacin
- Cyclosporine
- Levadopa (L-dopa)

**Lifestyle and Other Factors**
- Diet
- Alcohol consumption
- Age
- Gender
- Family history

Gout can be viewed in four stages:

1. **Asymptomatic Tissue Deposition**
   - Patient has no symptoms of gout but has hyperuricemia
   - Crystal deposition is occurring and causing damage

2. **Acute Flares**
   - Acute inflammation of joints caused by urate crystal deposition
   - Characterized by pain, redness, swelling and warmth which may last days to weeks

3. **Intercritical Segments**
   - Occur after an acute flare and are characterized by continued crystal deposition
   - Segments will shorten as disease progresses

4. **Chronic Gout**
   - Characterized by chronic arthritis with soreness and aching of joints
   - Patients may develop firm clumps of uric acid crystals called tophi, usually in toes, distal finger joints, elbows or ears

Gout related joint pain, discomfort or inflammation can impede normal self-care, recreational or social activities. Complications related to gout, including kidney stones, irreversible joint damage or loss of motion may further restrict daily activities. Long-term gout may lead to cataracts or respiratory complications (as uric acid crystals build in lung tissue), as well as tophi, which may grow to the size of golf balls and can destroy joint bones and cartilage.

While Peter has no history of disability, his hypertension, use of a diuretic, alcohol use and inability to go to work corroborates your suspicion of gout.
Making a Gout Diagnosis

Peter may be tentatively diagnosed with acute gout clinically, but such a diagnosis can only be confirmed with arthrocentesis.

Initial onset of gout pain is usually confined to one joint, and gout is more likely if the pain begins in the big toe. Sixty percent of all first-time monoarticular gout pain initially presents in the big toe, an occurrence known as podagra. Peter indicated he had a similar episode of pain three months prior in his right great toe. This may have been his first acute attack. Polyarticular gout typically involves other joints in the lower legs or feet, but may involve elbows, wrists or hands.

Associated symptoms include:
- swelling near and beyond the affected joint
- redness or shiny skin
- mild fever or chills
- loss of appetite

Patients experiencing polyarticular gout are more likely to exhibit fever, chills or loss of appetite. Polyarticular gout does not refer to multiple joints at different times, but multiple joints at the SAME time. Though pain in the knee may indicate Peter has polyarticular gout, he denied having any fever or chills.

If acute or chronic gout is suspected, a serum uric acid test can be performed. A low serum uric acid level makes a gout diagnosis much less probable, but hyperuricemia and joint pain does not confirm gout. During an acute gout flare, a patient may paradoxically have normal or even low SUA levels. Suspicion of gout could warrant a referral to a rheumatologist for arthrocentesis. The definitive test to confirm or rule out gout is to aspirate and examine the synovial fluid of the affected joint for uric acid crystals. Even in the setting of hyperuricemia or classic podagra, when there is no available synovial fluid, other conditions should be ruled out. Osteoarthritis, septic arthritis, pseudogout (caused by calcium pyrophosphate crystals), and other rheumatic autoimmune diseases may all present similarly to gout.

The American College of Rheumatology outlines preliminary criteria for gout. Gout may be diagnosed if one of the following is present:
- Monosodium urate crystals in synovial fluid
- Tophi confirmed with crystal examination

If at least six of the following criteria are identified, gout may also be diagnosed:
- Asymmetric swelling within a joint on a radiograph
- First metatarsophalangeal joint is tender or swollen (i.e., podagra)
- Hyperuricemia
- Maximal inflammation developed in one day
- Monoarthritis attack
- More than one acute arthritis attack
- Redness observed over joints
- Subcortical cysts without erosions on a radiograph
- Suspected tophi
- Synovial fluid culture negative for organisms during an acute attack
- Unilateral first metatarsophalangeal joint attack
- Unilateral tarsal joint attack

Remember the 3 C’s:
1. CELL COUNT: order a cell count
2. CULTURE
3. CRYSTAL ANALYSIS under a polarizing light microscope

Gout By The Numbers

- 8.3 million Americans are affected by gout
- >20% of the U.S. population is affected by hyperuricemia
- The incidence of gout among Black men is almost twice that of White men
- 20-80% of patients with gout have a family history of the disease

While gout mortality is low, gout-related disability remains underestimated and understudied.
Referring to a Rheumatologist

While Peter’s case is not definitive, his prior episode of pain leads you to believe this could be his second acute gout flare.

After sharing your suspicion with Peter, you counsel him on the risk factors for gout, including alcohol consumption and diet. You also explain the need to change his diuretic prescription for hypertension to lisinopril and refer him to a rheumatologist to see if long-term treatment for gout is necessary. Peter asks how he would know if he has gout, and you explain the rheumatologist may want to test some of the fluid in his knee and this would confirm or rule-out gout.

When you are referring your patient to, or consulting with, a rheumatologist for the suspicion or treatment of gout, there are critical steps you can take to provide the best possible patient care, while avoiding the duplication of tests and procedures.

Your role is essential to the long-term health of your patients and maintaining their quality of life.

As your patients’ primary care provider, you play a vital role in recognizing ongoing gout flares or tophi and ensuring they receive a timely referral to a rheumatologist in your community. This collaboration provides patients with the best possible care.

Gout Referral Checklist

- Comprehensive Metabolic Panel
- Measure serum uric acid level
- X-ray of joint
- Document when serum uric acid measurement taken
  - During a flare? Or was the gout quiet?
- Joint aspiration with fluid sent to lab for cell count, crystals and culture (all three)
- If joint is unable to be aspirated, note if joint is injected
- Document timing of labs
- Document timing of flares
  - Knowing when labs were taken in relation to gout flares is important
- Timeline of meds
  - What medications
  - When did patient start and stop the medications
  - When did patient experience flare ups in relation to medications
  - Were any of the medications taken in combination? If so, when? Any flare ups?

Reminders

- Discuss lifestyle risk factors with patient
- While waiting for patient to see a rheumatologist acute treatment is possible with NSAIDs
  - Allopurinol should NOT be started at the time of an acute attack
- Patients should be taken off diuretics

Citations