



My Treatment Approach to Gout

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Abstract

Gout is the most common form of inflammatory arthritis in the United States. Nevertheless, gout remains misunderstood, misdiagnosed, underdiagnosed, and undertreated. Several new recommendation and guideline documents regarding the management of gout have been published in the past few years. New diagnostic modalities, such as ultrasound and dual-energy computed tomography, are now available. Newer treatment options exist, and older agents and their interactions are now better understood. This review addresses these recent diagnostic and therapeutic developments and describes our management protocol with the aim of providing the clinician with a pragmatic approach to gout management.

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Gout is the most common form of inflammatory arthritis in the United States, affecting 4% of the population,¹ and its prevalence has been increasing.² Its prevalence has also increased in other countries, which has been attributed to a westernized lifestyle, more comorbidities, and improved life expectancy.³ Most patients with gout are obese and have coexisting hypertension and renal disease.⁴ Unfortunately, gout remains misdiagnosed, underdiagnosed, and undertreated.⁵⁻⁸

New guidelines and recommendations have addressed the diagnosis and treatment of gout.⁹⁻¹¹ Advances have been made in the diagnostic imaging of gout with ultrasound (US) and dual-energy computed tomography (DECT). More data on older medications are now available, and new medications have been approved to treat gout.¹² The care of most patients with gout is managed by primary care providers; less than 10% of patients are referred to rheumatologists.¹³ This review addresses the recent diagnostic and therapeutic developments, guidelines, and recommendations, along with our management protocol. We aim to provide the clinician with a pragmatic approach to gout management.

MAKING A DIAGNOSIS

Confirmation of monosodium urate (MSU) crystals on polarized microscopy is the gold standard for diagnosis of gout. The presence of intracellular crystals is diagnostic of an acute flare, although extracellular crystals can

exist in the synovial fluid between attacks. A red, hot, and swollen great toe may be the most common presentation of acute gout; however, gout does not always present in this manner. The possibility of gout in nonmetatarsophalangeal joints and a polyarticular presentation must always be considered.

Diagnosis by Criteria

Gout is usually diagnosed clinically because most patients are seen in primary care practices, where lack of facilities and time hamper synovial fluid aspiration. For example, arthrocentesis was performed in only 8% of patients with suspected gout first seen in an emergency department,¹⁴ and it is unlikely that the use of arthrocentesis will increase substantially in the immediate future. Because of these real-world limitations, a diagnostic rule for acute gout was proposed and then validated for primary care settings.^{15,16} Seven clinical variables were used in the calculation (Table 1). Caveats to note are that the study included only monoarticular arthritis, and the diagnoses were dependent on the evaluating physician's expertise. Therefore, atypical presentations may have been missed.

The American College of Rheumatology (ACR) and the European League Against Rheumatism (EULAR) have also proposed clinical classification criteria for gout because of the low utilization of synovial analysis (these classification criteria are not intended to be diagnostic criteria).¹⁷ The ACR/EULAR criteria have as an entry criterion the occurrence of acute arthritis in a peripheral joint

or bursa, such as the metatarsophalangeal (MTP), ankle, or olecranon bursa. The presence of MSU crystals in synovial fluid was determined by ACR/EULAR to be a sufficient criterion to establish a diagnosis without further scoring. When synovial fluid is not available, clinical features, serum uric acid level, and imaging findings (US and DECT) are used to make the diagnosis. The ACR/EULAR calculator has sensitivity of 92% and specificity of 89% and is accessible at <http://goutclassificationcalculator.auckland.ac.nz>.

When time, resources, or both are limited, these criteria (ACR/EULAR and the diagnostic rule) may be useful to identify gout. Atypical presentations or lack of response to treatment should trigger comprehensive testing, including synovial fluid aspiration, use of US or DECT, closer patient follow-up, or referral to a rheumatologist, or a combination. If an infection is considered, whether alone or concomitantly with gout, synovial fluid aspiration must be performed by a qualified individual, and appropriate referrals must be made. A diagnosis of gout should always be considered in any person with an atypical, seronegative inflammatory arthritis. Examining the synovial fluid for crystals should be an essential step in the evaluation of any inflammatory arthritis.

Hyperuricemia and Gout

Not all patients with hyperuricemia develop gout. In the United States, 21% of the population have hyperuricemia, and 4% have gout.¹ The 5-year cumulative incidence of gout was 0.5% in men with uric acid levels of 6 mg/dL or less (to convert to $\mu\text{mol/L}$, multiply by 59.485) and 30.5% in those with levels of 10 mg/dL or higher.¹⁸ Uric acid levels may fluctuate and possibly decrease during an acute episode, but if normal, measuring uric acid 2 to 3 weeks after an acute attack has resolved will provide an accurate baseline and may aid in establishment of the diagnosis.^{19,20} Acute gout cannot be excluded by the presence of a normal serum urate level.

Gout in Women and Young Persons

Estrogen protects women from gout because of its association with enhanced renal excretion of uric acid,²¹ and estrogen in hormone replacement therapy has a similar effect.²² Gout occurs in only 0.2 per 1000 cases of women younger

TABLE 1. Diagnostic Rule in Patients With Monoarthritis^{a,b}

Variable	Points
Male sex	2
Previous arthritis attack	2
Onset within 1 d	0.5
Joint erythema	1
First MTP joint involved	2.5
Hypertension or ≥ 1 CVD variable	1.5
Serum uric acid >5.88 mg/dL	3.5
Category	Total points
95% of patients do not have gout. Consider alternative diagnoses.	≤ 4
Insufficient basis for diagnosis. Consider arthrocentesis if possible; otherwise, careful follow-up.	5-7
85% of patients have gout.	≥ 8
^a CVD = cardiovascular disease; MTP = metatarsophalangeal.	
^b SI conversion factor: To convert serum uric acid values to $\mu\text{mol/L}$, multiply by 59.485.	

than 45 years.²³ Women with gout tend to be older and have more comorbidities, such as obesity and kidney disease, compared with men. Diuretic use as opposed to dietary triggers is more common in women than in men with gout.²⁴ Elderly women, particularly those taking diuretic agents, may have an initial polyarticular presentation, upper extremity—dominant disease, or tophi that may be confused with rheumatoid nodules.^{25,26} Tophi may also be present in Heberden nodes.

Approximately 25% of patients with gout have a family history. However, in patients with early-onset gout (age <25 years), 80% have a family member with gout.²⁷ These patients should be referred to a rheumatologist for further evaluation and management.

ROLE OF IMAGING

Radiography and Computed Tomography

Radiographs usually have negative findings but can be used to rule out fractures. Disease 5 to 10 years²⁸ after onset may show tophi and typical erosions, called rat bite erosions, which have overhanging edges.²⁹ Joint space is preserved until later in the course of the disease. Conventional computed tomography is not used in the routine diagnosis of gout, but it is excellent for identifying erosions.³⁰

Ultrasonography

Ultrasound is a well-accepted, safe, noninvasive, nonionizing, portable, and relatively

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