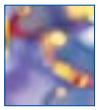

# Management of acute gout

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## Summary

**The appropriate management of acute gout begins with confirming the diagnosis. When the diagnosis is uncertain consider other possible causes of joint inflammation, particularly sepsis. Anti-inflammatory therapy promptly relieves the pain of acute gout. The rapidity with which anti-inflammatory medication is commenced following the start of an attack is of greater importance than the specific drug chosen or the route of administration. Changes to therapy that aggravate the acute attack, such as altering hypouricaemic medication, should be avoided.**

Key words: colchicine, non-steroidal anti-inflammatory drugs, uric acid.

*(Aust Prescr 2004;27:10–3)*

## Introduction

Acute gout presents as an acutely inflamed joint. Other conditions have the same presentation so confirming the diagnosis is a sound platform for immediate management and good long-term advice. The diagnosis must be certain if there is a decision to use life-long hypouricaemic therapy. Aspirating the joint is ideal management[1], but is not always possible. The ability to aspirate the involved joint influences the choice of therapy. If infection cannot be adequately excluded then corticosteroid therapy (intra-articular or oral) is best avoided.

## What causes gouty arthritis?

Sodium urate crystals sometimes form in patients with hyperuricaemia. Gout develops if there is an inflammatory reaction to these crystals.

### *Hyperuricaemia*

In body fluids, sodium urate reaches saturation at a uric acid concentration of about 0.42 mmol/L. Higher concentrations represent hyperuricaemia and are associated with increased incidence and prevalence rates for gout. For a given concentration of hyperuricaemia, men and women have equal risk of gout. However, men have higher concentrations of uric acid and therefore a higher prevalence of gout, whereas premenopausal women and children have lower concentrations and therefore a lower prevalence of gout.

The tendency of laboratories to report a range of 'normal' values (which differ considerably between laboratories) contributes to confusion. It makes little sense to consider what is 'normal' – what matters is whether the concentration places the person at risk of crystal formation. The 'healthy' uric acid concentration is less than 0.42 mmol/L.

### *Crystal formation and the inflammatory response*

The formation of urate crystals only occurs in about 20% of people with uric acid concentrations above the saturation level, however the likelihood increases as the concentration increases. Crystals form initially within joints (synovium) and subsequently in other connective tissue sites such as bones, skin and tendons. An aggregation of crystals is called a tophus. Although hyperuricaemia is required for crystal formation, it is not the full explanation. Urate crystals form in only certain locations, and not at all in most people with hyperuricaemia. Various biological substances, such as IgG, influence the nucleation and growth of urate crystals. The balance between inhibitors and promoters of crystal formation probably plays a major role in determining if and where urate crystals form.

Urate crystal formation occurs slowly (weeks to months) and does not produce symptoms. The inflammatory system largely (but not completely) ignores the crystals most of the time, but eventually an inflammatory response occurs resulting in an attack of gout. Many components of the inflammatory system are involved in acute gouty inflammation and neutrophils play a key role.

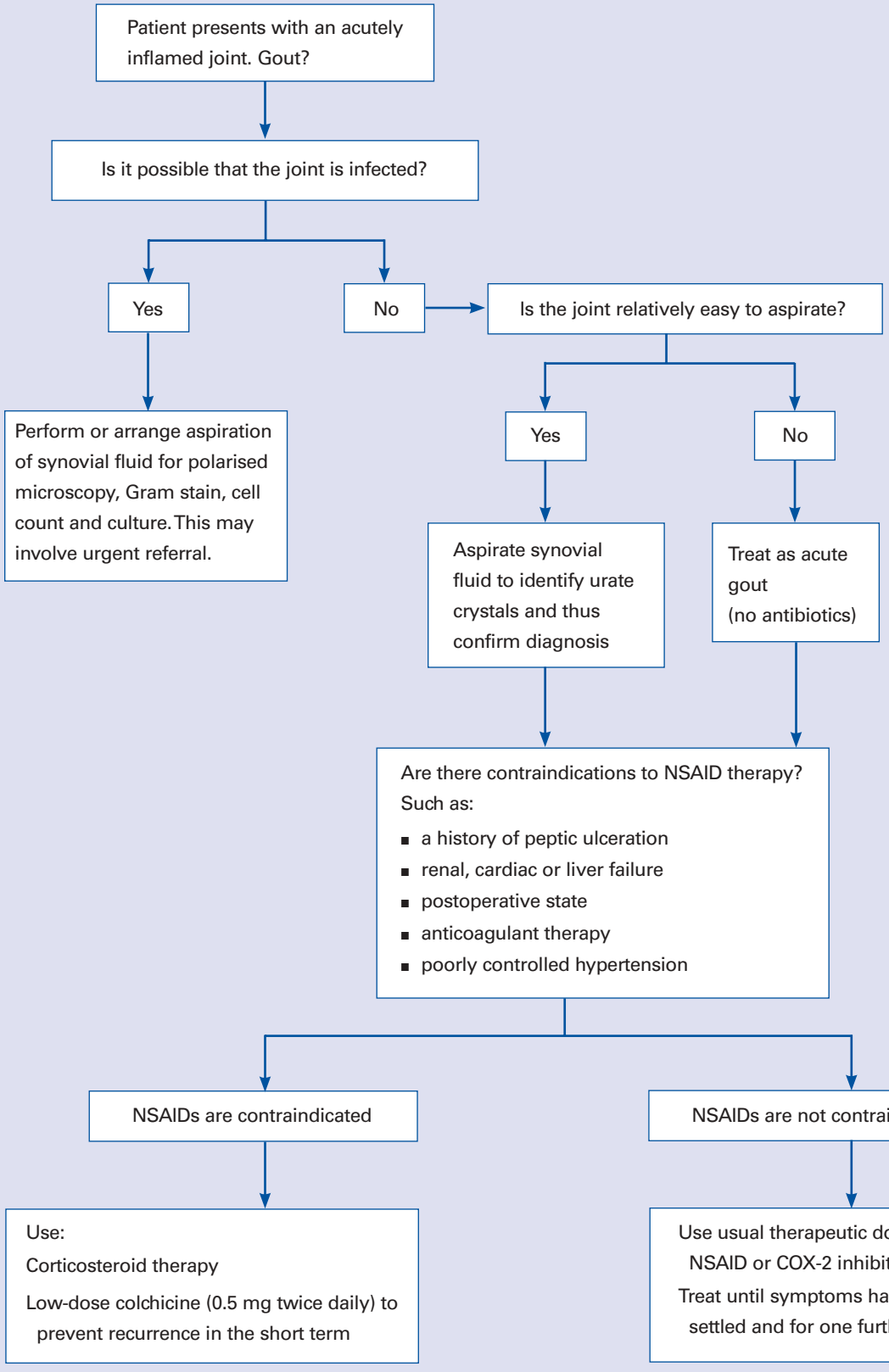
## Management (Fig.1)

The management of acute gout relies on an understanding of what is safe and appropriate when the diagnosis is likely (but may not have been proven). Therapy needs to be modified in light of other health problems, particularly contraindications to non-steroidal anti-inflammatory drugs (NSAIDs). The acute attack is also an opportunity to assess and manage associated disorders such as obesity, excessive alcohol consumption, hypertension, hyperlipidaemia and renal insufficiency. Controlling these problems may prove to be of greater long-term benefit to the patient than controlling their hyperuricaemia.

There is a strong suggestion that how soon therapy is commenced after the onset of symptoms in acute gout is more important than which treatment is chosen. A few hours can make a substantial difference.

*Fig. 1*

**Management of acute gout**



### *Joint aspiration*

Aspiration for Gram stain, culture and synovial fluid examination is essential if there is any possibility that the joint may be infected and is of great help if gout has not been previously diagnosed. Polarised light microscopy will identify the strongly negatively birefringent crystals of monosodium urate monohydrate. It is easiest to obtain synovial fluid during an acute attack when the joint is swollen. Large joints are relatively easy to aspirate whereas others, such as the midtarsal joints that are commonly affected by acute gout, are very difficult.

The aspirated fluid should be examined promptly, because within 24 hours the cell count falls and crystals become more difficult to see. If a delay is unavoidable, the fluid should be stored at –20°C to –70°C which will preserve cell and crystal morphology well for several weeks. Crystal identification in synovial fluid is dependent on the skill of the observer and the quality of the microscopic equipment, although urate crystals (unlike calcium pyrophosphate crystals) are relatively easy to detect.

### *NSAIDs including COX-2 inhibitors*

A non-steroidal anti-inflammatory drug (NSAID) at the usual therapeutic dose is appropriate for most patients who are otherwise well. All NSAIDs including COX-2 inhibitors are effective in acute gout. Double-blind comparative studies between NSAIDs (including NSAID versus COX-2 inhibitor[2]) have shown no significant difference in efficacy, but these trials had little power to detect any difference. Treatment is continued at least until the attack has settled and often for one further week.

> ‘Any sudden change (especially fall) in the concentration of serum uric acid will exacerbate the attack’

### *Corticosteroids*

Various forms of corticosteroid therapy have been studied, but there are few high quality controlled trials in acute gout. In a study of 100 patients (76 of whom completed the trial) intramuscular adrenocorticotrophic hormone (ACTH) 40 IU produced faster relief (3 versus 24 hours) and fewer adverse effects than indomethacin. A non-randomised, non-blinded study comparing triamcinolone acetonide 60 mg intramuscularly with oral indomethacin 50 mg three times daily showed no difference in efficacy and toxicity. A randomised non-blinded study of ACTH 40 IU and triamcinolone 60 mg intramuscularly in 31 patients with acute gout found a higher re-injection rate with ACTH, but no difference in time to resolution. Another non-randomised, non-blinded study in 27 patients with acute gout found no difference in efficacy between oral diclofenac 150 mg/day, intravenous methylprednisolone 125 mg and intramuscular betamethasone 7 mg. Oral prednisone is also effective. Prednisone 10 mg twice daily for three to five days (depending on the speed of resolution of the attack) followed by a progressive reduction to zero over two weeks is an effective regimen.

Intra-articular corticosteroid (betamethasone 5.7 mg or methylprednisolone acetate 40 mg for a knee joint) is effective and convenient when only one joint is involved and when that joint is easy to inject. In this situation it is usually possible to aspirate joint fluid to confirm the diagnosis and exclude sepsis. Provided joint fluid has been obtained and has been sent to the laboratory for culture, it is appropriate to go ahead with the corticosteroid injection. It is not safe to inject a joint in which sepsis is a possibility if it has not been possible to obtain synovial fluid. Injecting corticosteroid is likely to temporarily suppress the joint inflammation and result in a delay in recognition of the joint infection.

### *Colchicine*

Although this drug has been used to treat acute gout since the sixth century and is of proven efficacy, it should rarely be prescribed as primary treatment because of its toxicity. In the only controlled trial of colchicine in acute gout[3], two-thirds of the patients treated with colchicine had improved after 48 hours, but all had developed diarrhoea after a median of 24 hours. Low-dose colchicine (0.5 mg twice daily) however is well tolerated and effective at preventing recurrences[4] particularly after once-off treatments such as intra-articular corticosteroid. NSAIDs including COX-2 inhibitors can also be used to prevent recurrence.

### *Avoid changing hypouricaemic therapy*

During the treatment of acute gout any sudden change (especially fall) in the concentration of serum uric acid will exacerbate the attack. Patients taking regular hypouricaemic therapy should therefore not stop their treatment. Likewise, hypouricaemic therapy should not commence until after the attack has settled. The use of concurrent low-dose colchicine (0.5 mg twice daily) during the introductory phase of hypouricaemic therapy reduces the frequency of attacks during that relatively high-risk period.

## Conclusion

The management of a patient presenting with acute gout involves exclusion of sepsis, confirmation of the diagnosis with crystal identification whenever possible and prompt treatment with an anti-inflammatory drug. Low-dose colchicine

is sometimes used to reduce recurrences. Changes of hypouricaemic therapy should be avoided during an acute attack. The decision to use hypouricaemic therapy for gout (usually a lifelong commitment) is never urgent and should be delayed at least until the acute attack has settled.

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*Conflict of interest: none declared*

## Self-test questions

*The following statements are either true or false*
*(answers on page 23)*

3. Allopurinol should be stopped during an acute attack of gout.
4. Formation of sodium urate crystals immediately precipitates an acute attack of gout.

# Book review

## COPD in primary care. H. John Fardy, David Bellamy and Rachel Booker.

## Sydney: McGraw-Hill Australia; 2003.

## 195 pages. Price $32.95 (including GST)*

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The title 'COPD in primary care – all a GP needs to know about chronic obstructive pulmonary disease (Australian adaptation)' describes the breadth of the book content accurately. The style makes for easy reading with the key points presented at the beginning of each chapter. It also facilitates a very quick review of the book by readers letting them focus where they want to read in depth.

There is an appropriate background of pathology, physiology, diagnostic strategies and management strategies. The COPD-X Guidelines for Australia[1] are also summarised. There is a chapter on possible new therapies for chronic obstructive pulmonary disease (COPD) which are useful for practitioners to answer patients' common question – 'What is likely to be new in COPD?'.

The book's strengths include:

- highlighting and providing information on pulmonary rehabilitation and social issues
- touching on end-of-life issues
- a challenging chapter on the identification of COPD patients in general practice, which will challenge the current system of care and point to strategies to improve outcomes for patients
- useful contact numbers for a range of activities, including the Quitline for smoking cessation.

There are several weaknesses which affect the reading of the book:

- non-approved medications for COPD are included in the book (this highlights the difficulty of updating, when it is likely that some medications will be approved by the Therapeutic Goods Administration for use in Australia in the future)
- the levels of evidence are not highlighted within the book although there is a table outlining the classification of levels of evidence
- Table 11.1 ('Deciding whether to treat an acute exacerbation at home or in hospital') could be made more relevant to the Australian setting. It is most important for practitioners to take away the message that **it is the rate of change** of arterial oxygen tension that is the key issue in deciding whether someone is to be admitted, rather than the absolute value. Additionally, the absolute value given in this table is low by Australian standards. It would also be preferable to put in oxygen saturations because pulse oximetry will become more of a standard as the equipment becomes more widely available.
- the chapter on smoking provides a broad-brush approach, but does not engage all of the specifics that can be provided in this process. It would be useful to reference Australian guidelines such as those contained in the Therapeutic Guidelines: Respiratory.

Overall the book is going to be a useful reference for people to brush up on issues with regard to COPD management and to provide accurate information to the patient.

## Reference


1. Thoracic Society of Australia and New Zealand; The Australian Lung Foundation. Chronic Obstructive Pulmonary Disease (COPD) Australian and New Zealand Management Guidelines and the COPD Handbook. Lutwyche, Qld: The Australian Lung Foundation; 2002.


* *Australian Prescriber* readers are offered 15% discount by McGraw-Hill Australia (phone 02 9900 1854; quote code COPD2004).