

Clinical Presentation and Disease Associations of Gout: A Hospital-based Study of 100 Patients in Singapore

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Abstract

The aim of this retrospective study was to characterise the clinical presentation and disease associations of Oriental patients with gout seen in our hospital over a six-month period. One hundred patients comprising of 77 males and 23 females [89% Chinese, 7% Malays, 2% Indians and 2% others; mean age was 50.9 years (range 18 to 82 years), mean age at onset of disease was 43.7 years (range 16 to 78 years)] were studied. The disease was familial in 18% and 44% of patients had a history of alcohol ingestion.

Co-morbid conditions included hypertension (36%), hyperlipidaemia (25%), renal failure (17%), ischaemic heart disease (13%), diabetes mellitus (4%), systemic lupus erythematosus (3%), psoriasis (2%) and ankylosing spondylitis (1%). The majority of patients (68%) had at least one associated disease. At the onset of disease, the joints commonly involved were the ankles (39%) and knees (27%) whilst the first metatarsophalangeal (MTP) joint was affected in only 26% of cases. Polyarticular onset was uncommon (n = 6). The precipitating factors reported by the patients included food (n = 23), alcohol (n = 12), drugs (n = 4), trauma (n = 3) and surgery (n = 2). Eleven patients had a history of renal calculi and 15% had tophaceous gout. Majority of patients (71%) had been treated with urate-lowering drugs (allopurinol).

We concluded that gout in Singapore predominantly affects middle-aged men who often have an accompanying illness.

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Introduction

Gout is a common metabolic disease that causes arthritis which is often painful and sometimes disabling. It results from the deposition of monosodium urate monohydrate crystals in the joints and soft tissue giving rise to an acute inflammatory response.¹ The main risk factor for the development of the disease is persistent hyperuricaemia.

The disease usually affects middle-aged men and post-menopausal women.¹ In most cases, gout is characterised by an acute onset of monoarthritis of a peripheral joint in the lower limb. However, the clinical profile of patients with gout in Singapore has not been well documented. This paper presents the results of a hospital-based study of our local patients with gout.

Materials and Methods

The case notes of 100 randomly selected patients with gout seen in the Department of Rheumatology and Immunology, Tan Tock Seng Hospital, during a six-month period between February and July 1996 were reviewed. The department is a tertiary referral centre for rheumatic diseases in Singapore. All patients had typi-

cal negatively birefringent crystals in the synovial fluid (n = 19) or tophi (n = 15) or satisfied at least 6 of the published criteria for gouty arthritis.² Information regarding the presentation of the disease, triggering factors for the arthritis such as the consumption of food that was reported by the patients, complications, and treatment were sought and the data were entered into a standard protocol.

Results

Of the 100 patients, there were 77 males and 23 females. The racial distribution was 89 Chinese, 7 Malays, 2 Indians, and 2 others. The mean age of the patients was 50.9 years (range 18 to 82 years) whilst the mean age at onset of disease was 43.7 years (range 16 to 78 years) and the average disease duration was 7.0 years (range 0 to 31 years).

Nineteen patients had a family history of gout and their mean age at onset was 37 years (range 16 to 62 years) compared to 45.3 years (range 17 to 78 years) in those without a family history of the disease. A history of alcohol ingestion was noted in 44 patients. The co-morbid conditions that were present in the patients is

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listed in Table I. One of the patients with systemic lupus erythematosus (SLE) had tophaceous gout, and HBE thalassaemia, requiring frequent transfusion whilst the other 2 had lupus nephritis. Only 3 patients were on low dose aspirin for ischaemic heart disease and 7 were on a diuretic for hypertension or cardiac failure. Sixty-eight patients had at least one associated disease such as hypertension, hyperlipidaemia, diabetes mellitus, renal failure, or ischaemic heart disease. The mean serum urate level was 545 $\mu\text{mol/l}$ (SD 127, range 277 to 1029 $\mu\text{mol/l}$).

Table II shows the joints that were involved at initial presentation. The majority of patients had monoarticular joint involvement during the first episode of gout and only 6 had a polyarticular onset (more than 4 joints). Accompanying fever during the attacks of gout was reported by 24 patients. About a quarter of the patients ($n=23$) reported that certain food had precipitated the attacks of their arthritis, and these included various meats, seafood, sardines, anchovies, beans and vegetables. Alcohol ($n=12$), drugs ($n=4$), trauma ($n=3$) and surgery ($n=2$) were other factors that were also thought to be responsible for the attacks.

Fifteen patients had tophaceous gout whilst 2 had skin ulcerations as the result of the tophi. Other complica-

tions related to the disease included a history of renal calculi which was present in 11 patients, and 3 patients had carpal tunnel syndrome.

The drug therapy that the patients received is shown in Table III. There were no serious side effects like the Stevens-Johnson syndrome or bone marrow suppression reported by those taking allopurinol or colchicine. Two patients had excision of gouty tophi and another two had total hip arthroplasty; one for avascular necrosis of the femoral head and the other for protrusio acetabuli.

Discussion

Similar to studies done in Caucasian populations,^{3,4} the majority of our patients were middle-aged males. The mean age of onset in our patients is slightly lower than that reported by Chen et al⁵ in a study of patients with gout in Taiwan but is similar to smaller study done locally (unpublished data-Lai Y L, Ng S C) as well as in black Africans.⁶ The group with a family history of gout had a lower mean age at onset compared to those without, a finding which suggests that familial gout may occur at an earlier age. The predominance of males in our cohort is not unexpected although other investigators have noted a higher male to female ratio.^{5,7}

The percentage of Chinese patients in our cohort (89%) appears to be disproportionately high compared to the general population (78.2%).⁸ In a study of 51 local patients seen in a district hospital (unpublished data-Lai Y L, Ng S C), a lower percentage of Chinese patients (72%) but larger proportion of Malays compared to the general population (26% versus 14.3%) was reported. It is possible that referral bias may account for the differences. However, racial differences in the prevalence of gout are well documented. For example, the Maoris and the Polynesians have a high prevalence of hyperuricaemia and gout.^{9,10} In Taiwan, gout was found to be more common amongst the Aborigines compared to the non-Aborigines.¹¹ Interestingly, there were very few Indian patients in our study group. It is unclear whether this reflects a truly low incidence of gout in the Indian population or just a referral bias and population studies will be necessary to determine if there are ethnic differences in the prevalence of gout locally.

TABLE I: CO-MORBID CONDITIONS PRESENT IN THE 100 SINGAPOREAN PATIENTS WITH GOUT THAT WERE STUDIED

Co-existing disease	% of patients
Hypertension	36
Hyperlipidaemia	25
Renal failure	17
Ischaemic heart disease	13
Diabetes mellitus	4
Systemic lupus erythematosus	3
Psoriasis	2
Ankylosing spondylitis	1

TABLE II: JOINTS THAT WERE AFFECTED AT THE ONSET OF GOUT

Joint	No. of patients*
Ankle	39
Knee	27
First MTP	26
Wrist	5
Other MTPs	4
PIPS	4
Midtarsal	3
Elbow	2
Shoulder	1

MTP: metatarsophalangeal

PIP: proximal interphalangeal

* Some patients had more than one joint involved at onset of the disease.

TABLE III: DRUG TREATMENT RECEIVED BY THE PATIENTS WITH GOUT

Drug	%
NSAIDs	83
Allopurinol	71
Colchicine	55
Corticosteroids	35
Probenicid	2

NSAIDs: non-steroidal anti-inflammatory drugs

Co-existing medical illnesses like hypertension, hyperlipidaemia, ischaemic heart disease and renal failure were not uncommon in our patients and the association between gout and these diseases is well known.' Indeed, more than two thirds of the study cohort had at least one concurrent illness which may result in a greater risk of morbidity and mortality than gout itself. Thus, it is important to exclude the presence of these associated conditions in any patient who presents with gout. The occurrence of tophaceous gout in SLE had been previously reported although it is not common.¹² Our department has a large cohort of about 1000 lupus patients but only 3 had gout at the time of the study, and only 1 had tophi. It is probable that the presence of renal disease contributed to the occurrence of gout in SLE as evident by the presence of lupus nephritis in 2 of our patients.

The ankle joint was most commonly involved at initial presentation. The first metatarsophalangeal (MTP) joint was affected in only a quarter of our patients at onset, although it is typically described to be involved in the majority of patients with gout at some stage of their disease.' Thus, the absence of first MTP joint involvement at initial presentation should not exclude the diagnosis of gout in a patient with a typical history of acute arthritis. About a quarter of our patients had accompanying fever during the attacks of their arthritis and a diagnosis of septic arthritis may have to be considered as it can mimic or co-exist with the gouty arthritis. Polyarticular onset of gout is uncommon in our study and often other differential diagnoses are considered first before the diagnosis is made.

Only about a quarter of the patients attributed certain food as a triggering factor despite the common belief locally that those who suffer from arthritis should abstain from various foodstuff. The food that were described to be responsible for the attacks of gout were those typically high in purines such as various meats, seafood, sardines, anchovies, beans and vegetables. A minority of the patients felt that alcohol was responsible for their attacks of gout although 40% admitted to previous alcohol ingestion. We were unable to quantify the amount and frequency of alcohol ingestion by the patients and perhaps many did not consume it in large amounts. The role of drug-induced hyperuricaemia is not significant in our patients; few were on low dose aspirin or diuretics and only 4 reported that certain drugs had aggravated their gout.

The prevalence of tophaceous gout and renal calculi in our study is in-agreement with other studies.^{6,13} Few of our patients experienced associated complications such as skin ulceration (secondary to the tophi) and carpal tunnel syndrome.

The obvious drawback of our study is that it is retrospective. Furthermore, the patients referred to our insti-

tution may be more severe and have other illnesses complicating their rheumatological conditions. Nevertheless, the study provides an insight into the clinical profile of our local patients with gout, based on a reasonably large number of patients.

Non-steroidal anti-inflammatory drugs (NSAIDs) were the mainstay of treatment but the majority of our patients required a urate-lowering drug, commonly allopurinol. This may be because many of these patients have more severe disease and were referred to our hospital for control of their gout. Colchicine was also often used, usually for prophylaxis. Although there are concerns about the potential major adverse reactions to allopurinol and colchicine, none were reported by our patients. About a third of our patients had used steroids and it was often started by the primary health care physician, possibly because the patients did not respond to NSAIDs. Some patients were treated with steroids because they had contraindications to NSAIDs such as renal failure. Although it is effective in controlling the acute attacks, short courses of corticosteroid should be reserved only for patients who cannot tolerate NSAIDs or colchicine.

In conclusion, similar to the Caucasian population, gout in Singapore predominantly affects middle-aged Oriental male. Patients with gout should be screened for co-morbid conditions which are commonly present. At onset of disease, the first MTP joint is affected in only a quarter of the patients and polyarticular involvement is rare.

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