PATHOLOGISTS LANCET KENYA

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"Maabara ya Kisasa"

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Gout most frequently occurs in men between the ages of 40 to 60 years who are overweight or genetically predisposed. The disease is commonly associated with diets high in protein and alcohol but this is by no means always the case.

Introduction

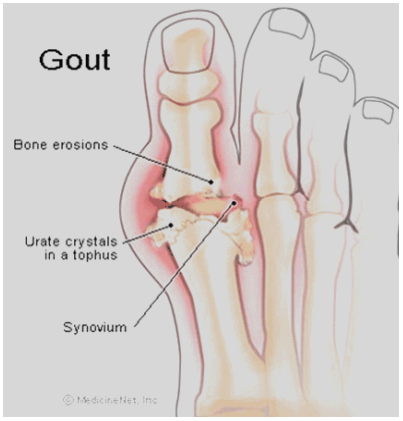
Gout is a common arthritis which is caused by the deposition of monosodium urate crystals within joints after chronic hyperuricaemia. It is in fact the most common inflammatory arthritis in men. Hippocrates described it as the "king of diseases and the disease of kings". Sydenham, an English physician, wrote about his own acute attack of gout in 1683. The word gout comes from the Latin gutta which means "drop"; this refers to the mediaeval flowing down of humours. This ailment may be attributed to a change in diet, lifestyle and longevity. Women develop gout mainly after menopause when the fall in estrogen, which is uricosuric, leads to hyperuricaemia. Diet and genetic polymorphisms of renal transporters of urate seem to be the main causative factors of primary gout.

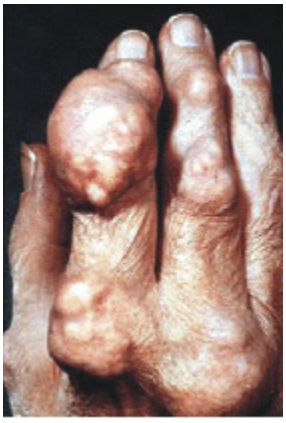
Chemistry & physiology

Uric acid is the final metabolite of endogenous as well as dietary purine metabolism. There is very little urate in the human diet. Urate is produced mainly in the liver and to a lesser extent in the small intestine. The production is based on the balance between purine ingestion, synthesis in cells, recycling and the enzymatic function of xanthine oxidase. Enhanced turnover of cells may lead to hyperuricaemia. The gastrointestinal tract excretes 25-30% of the uric acid produced daily. The remainder is excreted by the kidney. 90% of patients who suffer from hyperuricaemia do so owing to renal mechanisms such as impaired excretion of the renal uric acid which elevates the urate pool in the body. The first metatarsophalangeal joint is classically affected and referred to as podagra which means a seizure of the foot.

Clinical manifestations

Acute gouty arthritis often begins in one joint (in the lower limb 85-90% of cases). The first metatarsophalangeal joint is classically affected followed by the midtarsi, ankles, knees and arms.The initial attack is rarely polyarticular. Patients often have a second attack within 6 months to 2 years. Subsequent attacks often last longer and affect several joints. Factors that trigger acute attacks include alcohol, meat and seafood consumption,surgery, trauma and fasting. Chronic gout follows when acute attacks are left untreated and is characterized by chronic destructive polyarticular involvement with low-grade joint inflammation and joint deformities. Tophi deposition occurs and can be found anywhere in the body. Severe tophi deposition in the hand and fingers occurs in the chronic stages of gout.





The laboratory diagnosis

The laboratory diagnosis is made by analyzing synovial fluid or tophus aspirate for the identification and presence of monosodium urate crystals. The aspirate should reach the laboratory rapidly for detection under the light microscope as well as the polarizing microscope. Monosodium crystals appear as intracellular and extracellular thin needle-shaped crystals with sharp points. They are strongly birefringent. As gout and septic arthritis can coexist, the possibility of bacterial infection together with the crystals must always be borne in mind. A third of patients will have a normal uric acid level during the acute attack of gout.

Chronic gout
10 - 40% of patients with chronic gout develop kidney stones and this is the most common gout-related nephropathy. It is also important to note that these stones are not visible on the plain radiography as they are radiolucent. The prevalence of metabolic syndrome is also associated with the gout patient. Atherosclerotic cardiovascular disease with dyslipidaemia, raised blood pressure, raised glucose levels and a prothrombotic and proinflammatory state often co-exist in this patient population. Hyperuricaemia often precedes the development of diabetes mellitus, obesity and hyperinsulinaemia. Hyperuricaemia might also lead to hypertension.

Common drugs that raise S-urate concentrations include:
- Diuretics
- Ethambutol
- Pyrazinamide
- Ethanol
- Chemotherapy
- Levodopa

Common drugs that lower S-urate concentrations include:
- High doses salicylates
- Estrogens
- Ascorbic acid

Treatment

The treatment of acute attacks involves rest, ice application to the affected joint, non-steroidal anti-inflammatory drugs and colchicine. Urate-lowering therapy is instituted to maintain the urate concentration below the saturation point for monosodium urate. The aim is to dissolve the crystal deposits while therapy is maintained. The treatment should be initiated after the inflammation has abated. Therapy should be continued indefinitely as gout usually recurs a few years after treatment is stopped. Uricosuric agents can be used in patients with with underexcretion of uric acid. Gout is not always a progressive disease and therapy is not universally recommended after one acute attack. Allopurinol lowers uric acid by inhibiting an enzyme (xanthine oxidase) activity and is used as 1 line urate-lowering therapy. Uricosuric agents nd such as probenecid and sulfinpyrazone can be used as 2 line treatment for patients with underexcretion of uric acid. Alternative measures such as dietary adjustments, weight loss, reduced alcohol intake, substitution of diuretic for other antihypertensive drugs might reduce uricaemia. Fluid intake must be increased and the urine pH must be maintained above 6 to prevent the formation of stones.

Patient education
Patient education remains an area where the medical fraternity can certainly do better. Research studies have indicated that only 30-60% of patients remain on the urate lowering treatment one year after initiation of therapy.
Every patient should be informed on the nature of the disease and the therapy involved plus the importance of lifestyle and dietary factors. Lancet is publishing a patient information newsletter to be distributed in conjunction with this newsletter designed for the treating physician's use.

Compiled by Dr L Marcus of Lancet SA in March 2010
The information is based on a seminar in the Lancet 2010, 375:318-28 and information supplied by the UK GOUT SOCIETY. The illustrations and photograph were sourced from the internet.