

## ***Different forms of gout***

### **Why is gout so much more common in men than in women?**

*Primary gout* is more common in men because of a change at puberty, which results in the kidneys pulling more uric acid back into the blood. Urate levels in the blood rise at puberty in both sexes but to a considerably higher level in men. However, there are rare inherited conditions, where over-production of purines in the body leads to primary gout in both sexes in children and young people; these are described in Chapter 6 (***Gout in young people***).

### **If there is ‘primary’ gout, I expect there must be ‘secondary’ gout. What is that?**

Secondary gout can be seen in people of either sex and at any age. It has the same symptoms, arising from *hyperuricaemia*, or high levels of urate in the blood, but in this case the gout has other causes:

- a metabolic disorder such as those discussed in Chapter 6,
- another disorder, such as glycogen storage disease, methyl malonic aciduria, or fructose intolerance,
- prescribed drugs such as diuretics (see Chapter 4, ***Drugs to lower the level of urate in the blood***), and pyrazinamide used for tuberculosis, which interfere with the excretion of uric acid from the kidneys,
- the destruction of cells through chemotherapy or physical damage,
- poisoning by lead (saturnine gout).

**Surely lead poisoning is no longer a hazard? I remember when my parents had all the lead plumbing stripped out of their old house, and that was many years ago.**

Lead pipes used for water supplies, or lead in the storage tanks, should have been eliminated from all old houses as their systems were upgraded. The pipes and tanks caused a danger from lead salts dissolved in the drinking water. The downfall of the Roman Empire was partly blamed on lead poisoning, which can result in kidney damage, mental illness and, of course, gout.

Lead paint can still be found under more recent layers, or in old buildings that have not been repainted for 30 years or so. Stripping the paint down to the bare wood will cause dangerous dust to be released, so masks should be worn and the debris should be disposed of as toxic waste. Be careful that children do not nibble on old painted toys or furniture, or on old paint that may flake off old doors. Growth and intellectual capacity may be diminished in children chronically exposed to lead (e.g. in solder or old paint) in addition to hyperuricaemia.

**My father and grandfather had gout, but I think that my attacks started at an earlier age than my father's disease. If it runs in the family, are my younger brother and his son at risk?**

Many men with primary gout have a relative with the same condition – but it is not known to what extent genetic or lifestyle factors affect any one person. Usually, urate levels have been high for many years before the capacity of the kidneys is exceeded and urate crystals begin to be deposited. You are probably better fed and less active than your grandfather and father were, so perhaps you have a higher plasma urate level earlier in life. Your brother and his son may not suffer gouty attacks if their other risk factors (obesity, purine-rich diet, high blood pressure) are low.

Note that gout will 'run in the family' of people with the rare disorders described in Chapter 6 (*Gout in young people*). It would be wise to ensure that these metabolic causes have been

ruled out, especially if your first gouty attack occurred when you were in your teens or twenties, and if you are worried about the future health of the next generation.

**My daughter, in her twenties, has had an attack of gouty arthritis. I thought gout affected only middle-aged men?**

Women before the menopause are usually protected from gout because the normal levels of the female sex hormone oestrogen help to promote the excretion of uric acid from the kidneys. After the menopause, levels of oestrogen fall unless hormone replacement therapy (HRT) is undertaken, and women may have their first attack of gout in late middle age (older than first attacks in men). Gout in a young woman is therefore unexpected, and your daughter should see her doctor and ask to be investigated for a metabolic disorder (see Chapter 6, *Gout in young people*) rather than assuming that it is simply a defect in the excretion of uric acid.

**My 75-year-old aunt has lumps on her ears and one hand, which came on after starting drugs for high blood pressure. This has been diagnosed as gout, so will she have attacks of gouty arthritis as well?**

Gout is becoming much more common in middle-aged and older women, especially those who are prescribed diuretic drugs ('water tablets'). As mentioned earlier, women are better excretors of uric acid than men, but some blood pressure drugs, especially diuretics, decrease the body's ability to excrete uric acid. Attacks of acute gouty arthritis are not commonly seen in older women. The disease in this situation is usually called *tophaceous gout* (the lumps are called tophi; one lump is a tophus). Some tophi may be large and unsightly lumps on the back of the hands; others may lurk in the skeleton, causing damage that will be evident on x-ray pictures.

**Can gout arise suddenly as a result of a serious illness?**

Yes, this can happen but it is uncommon. Uric acid is formed from purines released when cells die at the end of their normal life span, and it passes into the blood system. Thus, the wasting that may occur after a serious accident or major operation or, more important, cancer and cancer therapy can lead to hyperuricaemia, gout and possibly kidney failure. In cancer itself, both the growth and the death of cells occur much faster than usual. Some cancers, for example one that has spread to bone from another site, destroy nearby cells while they themselves are in the process of multiplying. Thus the rate of urate production rapidly exceeds the capacity of the kidneys to excrete it, which can lead to hyperuricaemia and gout. This is a form of secondary gout – the gout is a consequence of another disease.

Cancer treatment usually involves chemotherapy (with drugs) or radiotherapy (with x-rays). As a result, large numbers of tumour cells are killed quickly, with the release of vast amounts of purines. There may be a rapid rise of uric acid levels in blood and urine, and secondary gout may follow, as may acute kidney damage caused by uric acid crystals blocking the collecting ducts in the kidneys (the kidney tubules). As in any situation with an abnormally high level of uric acid (hyperuricaemia), tophi may also appear in the ears, under the skin and around the joints in such people. About 5 per cent of gout patients seen by hospital rheumatologists have high concentrations of uric acid derived from cells being destroyed by chemotherapy. To reduce this risk, many cancer specialists recommend the use of allopurinol (see Chapter 4, *Drugs to lower the level of urate in the blood*) at the same time as cancer therapy. The dose must be carefully judged in these cases and in the people described in Chapter 6 (*Gout in young people*), because xanthine (the side-product from the use of allopurinol) may also form stones and could lead to acute kidney (renal) failure. Some cancer specialists inject a preparation of an enzyme – uricase – which will remove uric acid from the blood system of people having therapy. This treatment is described in more detail in Chapter 7 (*Research and the future*).

**My daughter is studying to be a vet, and she says that some animals can get gout. Is she having me on?**

No, she's right. Birds excrete very concentrated uric acid – the white part of their droppings. An inbred strain of chicken with a deficiency in urate excretion gets really unsightly lumps on its legs and feet as a result of uric acid deposits. They are disabled – and not as cute as the cartoon chickens in this book! Likewise, uric acid is the end-product of nitrogen metabolism in snakes and lizards, and you can imagine the problems encountered by gouty snakes! Palaeontologists have evidence – presumably from fossil bones – that dinosaurs suffered from gout.

Curiously, humans, higher apes and some varieties of dogs, such as the Dalmatian, are the only mammals to have significant amounts of uric acid in their blood. Dalmatians usually excrete the uric acid very efficiently, but they are prone to uric acid stones in the kidneys. The dogs can be treated by restricting the purines in their diet, by giving allopurinol to slow the conversion to uric acid and by making the urine less acidic to keep up the solubility of the uric acid – much like humans, in fact. Interestingly, excreting uric acid in place of a more soluble (and smelly) chemical makes Dalmatians good hunting dogs – other species cannot detect them by their odour!

## ***Gout and the kidneys***

**The doctors say that my kidney stones are probably linked to my gout. What is the connection?**

Because it is not very soluble, uric acid is also deposited as 'stones' or an accumulation of crystals in the kidneys of some people with gout, especially if their urine is very acid – as it often is in the gouty. If the stones remain in the kidneys, they may increase the risk of infection in a kidney or other parts of the urinary tract. If a stone passes along the ureter (the tube from the kidney to the bladder) but is too big to travel with the urine, it

may cause severe pain and obstruct the flow of urine, leading to kidney damage caused by the rising pressure (called back-pressure) in the collecting system.

**I developed diabetes a few years ago, and my GP suspects that my kidneys may have become damaged. Will this lead to gout?**

Arterial disease is quite commonly a result of Type 2 (non-insulin-dependent) diabetes that develops in adults, especially those who are overweight and have high blood pressure. This often runs in families. If the circulation of your kidneys is affected, it may reduce the efficiency of their filtration process. This means that if you are at risk – through a high-purine diet or an increased production of uric acid – you might have an attack of gout. You should follow the advice on diet and exercise you are given to deal with the diabetes, and also try to maintain a low intake of purines (see Chapter 5, *Food and drink*). Ask your doctor to check the levels of urate in your plasma.

**Have my kidneys suffered permanent damage as a result of gout? Or will they improve if I use the drugs and follow the diet that my doctor suggests?**

A mild degree of kidney damage can occur in people with gout but this does not necessarily imply that their kidneys are badly affected or that it will progress to kidney failure. Admittedly, there are some people who have developed a kidney disease resulting in hyperuricaemia and secondary gout, but these are different from people with ordinary gout, who may have only a mild degree of kidney damage.

Uric acid crystals may be deposited in the kidneys of some people who have a particularly pronounced type of hyperuricaemia, arising from inherited conditions linked to a gene on the X chromosome. The first symptoms from these conditions generally appear in childhood (see under ‘Incidence and diagnosis’, in Chapter 6, *Gout in young people*).