What are kidney stones?

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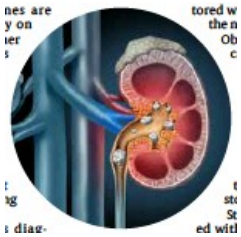
Kidney stones, sometimes referred to as renal calculi, are deposits of minerals that form in the urinary tract. These deposits can stick together to form increasingly larger particles, resulting in stones. Stones usually form in the kidney, but can move into the ureter (the tube that drains urine from the kidney) or the bladder. If left unchecked, small stones can grow substantially and on rare occasions the entire inside of the kidney can be filled with stone; this is known as a staghorn calculus.



HOW COMMON ARE KIDNEY STONES?

Kidney stones affect more than one in ten people worldwide, more so in countries with higher standards of living, such as the UK. The incidence of stones seems to have increased significantly over the past 20 years or so. Approximately half of people who develop a kidney stone will go on to have at least one recurrence during their lifetime.

WHY DO KIDNEY STONES FORM?

Kidney stones occur when the concentration of waste chemicals in the urine (such as calcium, oxalate and uric acid) are too great; this may be a result of not drinking enough fluids and producing a smaller volume of more concentrated urine. The urine may also lack substances that prevent these deposits from sticking together (such as citrate and magnesium); these are known as inhibitors.

Risk factors for developing stones include: l A personal or family history of stone disease l Dietary factors, including high protein, salt and sugar intake l Being overweight l Digestive diseases and gastrointestinal surgery l Medical conditions such as cystinuria, renal tubular acidosis, hyperparathyroidism and recurrent urinary tract infection l Medications and supplements (vitamin C, calcium based-antacids, medications that are used to treat migraines or depression).

WHAT PROBLEMS CAN KIDNEY STONES CAUSE?

Many small kidney stones do not cause any symptoms. As stones get larger they may cause blood in the urine or urinary tract infections. Larger stones in the kidney may cause pain in the loin. Kidney stones increase the risk of chronic kidney disease. Stones can also move and cause a blockage, either within the kidney or in the ureter and can then cause severe pain and infections, which can become serious, even life-threatening, if not diagnosed and treated promptly; this scenario is a urological emergency and requires immediate assessment and treatment.

HOW DO YOU TEST FOR KIDNEY STONES?

Many kidney stones are found incidentally on scans done for other reasons. If a stone is suspected (or diagnosed by chance on another scan) a low-dose CT scan is performed to accurately show the number, size and location of any stones and the effect these might be having on the kidney.

Once a stone is diagnosed, blood tests are performed to assess for infection, changes in renal function and basic metabolic parameters that may have led to the stone being formed. A urine test is sent to check for infection.

If a stone is passed in the urine, or if it is removed surgically, this will be sent for biochemical analysis.

In patients who form recurrent stones, more detailed blood tests may be undertaken, as well as a 24-hour urine collection, before seeing a specialist in metabolic stone disease.

HOW ARE KIDNEY STONES TREATED?

Small, asymptomatic kidney stones can be often be left alone, or monitored with scans without the need for treatment. Obstructing stones can sometimes be left to pass spontaneously, if any pain is well controlled and if there is no sign of infection; this will depend on the size and the location of the stones. Stones can be treated with extra-corporeal shock wave lithotripsy (ESWL), ureteroscopy and ureterorenoscopy and holmium laser fragmentation or percutaneous nephrolithotomy (PCNL). About ten per cent of stones are made from uric acid; these can sometimes be treated with medical therapy instead of a surgical intervention. Once stones have been treated, investigations looking into why the stones have formed are undertaken. These can sometimes reveal a biochemical abnormality or underlying medical issue which, if treated, can reduce the frequency at which stones form in the future.

HOW CAN I STOP MYSELF GETTING A KIDNEY STONE?

Around half the people who develop a kidney stone will have a recurrence in the future. Following these simple measures will reduce the chances of this happening: l Maintain a healthy weight. l Undertake adequate exercise. l Drink plenty of water to keep the urine diluted. Aim to drink between two and three litres per day, assuming there is no medical reason not to. This should be increased if you live or work in a hot environment or undertake significant exercise. l Maintain a healthy and balanced diet, rich in vegetables and fibre, with normal calcium content, limited salt content and limited animal protein content.

Gidon Ellis is a consultant urological surgeon specialising in the management of kidney stones, prostate and urinary tract symptoms and all diagnostic and general urological issues. He provides specialist multi-disciplinary medical and surgical management, tailored to the individual needs of his patients. He sees patients at the Wellington in St John's Wood (Platinum Medical Centre), Royal Free Lyndhurst Rooms and Golders Green Outpatient and Diagnostic Centre for fast access to appointments, investigations and treatments. To book an appointment: info@gidonellis.co.uk, 07415 734 386