

What I tell my patients about interstitial nephritis

What is interstitial nephritis?

Nephritis means inflammation of the kidney. Interstitial refers to a specific part of the kidney that is inflamed.

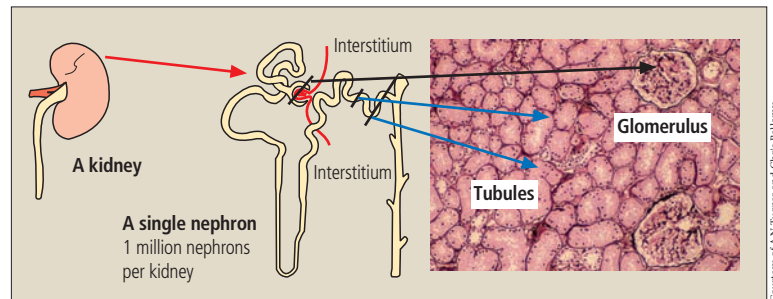
Each kidney contains a million tiny filters, called glomeruli. Each is joined to a small tube (tubule) to form a nephron. The interstitium is the area in which all these tubules lie (see Figure 1). The job of the tubules is to process the filtered urine – otherwise we would produce 150 litres of urine per day! Inflammation of these tubules is called interstitial nephritis.

How would I know if I had it?

Like many kidney diseases, interstitial nephritis causes few symptoms. When it does occur, you may feel tired and become thirsty, or start having to pass urine at night (nocturia). Sometimes, when it is caused by an allergic reaction, there may be a rash or you may have a temperature, but it often occurs without these.

How would my doctor know if I had interstitial nephritis?

Urine tests may help but may be only mildly abnormal. Your urine may contain white blood cells (these are more commonly present when there is a urine infection), and may show sugar, even when the sugar levels in your blood are normal. Blood tests may show signs of kidney



failure, such as a raised level of creatinine. A variety of other blood tests are often performed, aiming either to prove the diagnosis or to determine its cause.

All of the above tests help to suggest a diagnosis of interstitial nephritis, but it can usually only be proved by performing a kidney biopsy. This involves the insertion of a needle into one of your kidneys to obtain a sample that can be examined under a microscope. The needle is inserted using an ultrasound scanner to direct it, and local anaesthetic numbs the puncture site.

Are there different types?

Acute interstitial nephritis (AIN) means the inflammation has occurred recently, and may cause rapid loss of kidney function. Treatment can often reverse and cure it.

Chronic interstitial nephritis usually develops more slowly, and a large part of the damage to the kidney may be permanent.

Figure 1. A single nephron, and a view of the kidney under the microscope to show the interstitium

Courtesy of AN Turner and Chris Bellamy

Table 1. Causes of acute interstitial nephritis (AIN)

Allergy	An allergic reaction to a medicine is the most common cause (see text)
Infection	Although this is not common, some infections may cause AIN. The infection – which may be caused by either a virus or bacteria – is usually fairly obvious. Leptospirosis (this causes Weil's disease), tuberculosis, legionella (this causes Legionnaire's disease), mycoplasma, brucellosis, typhoid, HIV, cytomegalovirus and hantavirus are a few examples
Autoimmune diseases	Inflammation is sometimes caused by your own immune system attacking the kidney. This can occur on its own, or sometimes it occurs together with eye inflammation (tubulointerstitial nephritis with uveitis syndrome), or as a part of another autoimmune disease, such as systemic lupus erythematosus (SLE) or Sjogren's syndrome. Sarcoidosis is an uncommon condition that usually affects the lungs, but occasionally causes AIN too
Poisons	Poisons more usually cause chronic interstitial nephritis, but some may cause AIN. Mushroom poisoning is an occasional cause, when a poisonous mushroom has been mistaken for an edible one or for 'magic mushrooms'

Nicky Boddy
MBChB MRCP(UK)
Specialist Registrar
in Nephrology,
Department of
Renal Medicine,
Hammersmith
Hospital

Paddy Gibson
MBChB FRCP(Ed)
Consultant
Nephrologist,
Department of
Renal Medicine,
Edinburgh Royal
Infirmary



Acute interstitial nephritis

AIN is most often caused by an unusual allergic reaction to a drug, as drugs can become concentrated in the interstitium. Many drugs can cause AIN, but the most common are the non-steroidal anti-inflammatory drugs (NSAIDs), including painkillers such as ibuprofen (examples include Nurofen® [Crookes, UK], Advil® [Wyeth, UK] and Anadin Ultra Ibuprofen® [Wyeth, UK]), which can be purchased without a prescription. Another group of commonly prescribed drugs, which may cause AIN are antibiotics. These are frequently prescribed by GPs for the treatment of bacterial infections. The penicillins, cephalosporins and sulfonamide antibiotics have been most commonly reported to cause AIN. Another antibiotic called rifampicin is unique, in that the AIN generally occurs when the antibiotic is reintroduced after an interval. In some cases of drug-induced interstitial nephritis, it is easy to spot the causative drug; in others, it is less clear. As new drugs become available, more and more cases of drug-related AIN are reported. For example, a few years ago a number of cases of drug-induced interstitial nephritis were reported to have occurred with the use of drugs known as proton pump inhibitors. There are some other, less common, causes of AIN, which are listed in Table 1, page 17.

AIN usually responds to treatment. If it is caused by an allergic reaction to a drug, withdrawing the drug may be enough to allow the inflammation to settle down on its own. However, you may require treatment to reduce the inflammation. Steroids such as prednisolone are usually used, and may need to be continued for several weeks. Occasionally, dialysis treatment is required, but this is usually only for a short time to allow your kidneys to recover enough to function without the support of the dialysis machine. The side-effects of steroid treatment may sound worrying, but the most severe side-effects occur only after treatment has been continued for a long time. There is little risk from a short course of steroid treatment. If you are commenced on steroids, you will be given a

Box 1. Causes of chronic interstitial nephritis

- Acute interstitial nephritis (AIN): anything that causes AIN may cause chronic interstitial nephritis, if the cause continues (for example, if it is caused by a drug that the patient continues to take)
- Poisons: lead poisoning is a rare cause of interstitial nephritis. Herbal medicines have also rarely caused kidney damage, probably when the wrong plant has been used by mistake
- Analgesic nephropathy: this can occur in patients who consume excessive analgesics (painkillers) over a prolonged period of time. It is ordinarily seen in patients suffering from chronic painful illnesses, such as arthritis or migraines. Since medicines containing a drug called phenacetin were withdrawn from the pharmaceutical market, analgesic nephropathy has become less common
- Multiple myeloma: this is a type of cancer of the white blood cells. It often develops slowly and it can be treated, but in some patients it causes kidney damage
- Unknown: it is quite common for no cause to be found. Chronic interstitial nephritis is a particularly common cause of kidney failure in patients of Asian origin in the UK – the explanation so far is unknown

steroid card to warn you and other doctors that you must never abruptly discontinue treatment.

Chronic interstitial nephritis

'Chronic' means that it has been there for a long time, but because interstitial nephritis causes few symptoms, it is common for it to be discovered unexpectedly when kidney function suddenly worsens; for example, by a coincidental illness.

In chronic interstitial nephritis, treating or removing the cause can prevent further damage (see Box 1 for some of these causes). However, some damage will be permanent. If it is severe, kidney failure may require treatment by dialysis or kidney transplantation. For example, mesalazine – a very effective drug used to treat an inflammatory condition of the bowel called ulcerative colitis – can cause interstitial nephritis. There is some evidence to show that even after discontinuing the drug, more than 50% of patients may be left with some lessening of their kidney function, and in rare cases the damage is irreversible ■

Key points

- Interstitial nephritis is a type of inflammation in the kidneys that can cause kidney failure.
- Acute interstitial nephritis is usually treatable.
- Chronic interstitial nephritis may cause permanent kidney failure if the cause cannot be found or removed.

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