


More info on interstitial nephritis

The interstitial part of the kidney is made up of the tubes (tubules) that lead from each filtering unit (glomerulus) (see [normal kidneys](#) for a diagram of a nephron – a glomerulus and its tubule). The coils of these tubes surround the glomeruli, so they can become involved if the glomeruli are diseased. The tubules and the interstitium can also suffer from some diseases of their own. This page describes some of these conditions.

| | |
|--|---|
| <p>Acute interstitial nephritis Chronic interstitial nephritis Myeloma kidney Acute tubular necrosis Other interstitial kidney diseases including: RTA, Fanconi Syndrome</p> |  <p>Many toxins can cause interstitial nephritis mushroom poisoning is a very rare cause</p> |
|--|---|

Acute interstitial nephritis (AIN)

This means that the tubules are inflamed. Like most diseases affecting the kidney, it produces very few symptoms unless the kidneys are quite severely affected. Blood tests will show that kidney function is not normal. Urine tests in interstitial nephritis often show only minor abnormalities, but the urine may contain white blood cells as if it was infected.

Most commonly AIN is an allergic reaction to something, often a medicine. Antibiotics and anti-inflammatory painkiller drugs are common causes of this. It can occur after taking some non-prescription medicines, such as ibuprofen (Nurofen, and other trade names). We have a separate page that gives a short

summary of information on AIN.

Causes of Acute Interstitial Nephritis (AIN)

Allergic - commonly a reaction to a drug. If it does not improve quickly after stopping the drug, this often responds to treatment with [steroids](#). There is a very long list of drugs that can occasionally cause AIN.

Infection - some infections can cause interstitial nephritis.

Poisons - while [acute tubular necrosis](#) (see below) is more common with poisons, some may cause inflammation, although this is usually chronic ([see below](#)).

Autoimmune diseases - sometimes inflammation is caused by your own immune system attacking the kidney. This is the most common cause of inflammation of the glomeruli but can also affect tubules. These are some types of autoimmune inflammation that can do this:

- **AIN alone** Autoimmune AIN may occur on its own, or together with inflammation of the eyes - so-called **TINU syndrome**, which stands for *tubulointerstitial nephritis and uveitis*.
- **As part of another autoimmune disease** - AIN may also occur as part of **Sjogren's syndrome** (a condition in which eyes and mouth become dry among other changes), and sometimes with autoimmune disorders affecting other parts of the body.
- **Sarcoidosis** - an unusual condition, often with inflammation in the lungs, and with a high level of calcium in the blood. Most people with sarcoidosis have lung disease and it affects the kidneys in only a few.

These diseases (particularly TINU syndrome) often respond to treatment with [steroids or other drugs that suppress the immune system](#).

Chronic interstitial nephritis

Chronic means something that continues without going away. It usually means that there is likely to be permanent scarring and damage even if the cause is taken away. Like acute interstitial nephritis, it has no symptoms until there is quite a lot of kidney damage. Some of the causes will cause other symptoms,

however, and the kidney trouble may then be picked up on blood and urine tests.

| Causes of Chronic Interstitial Nephritis |
|---|
| Causes of Acute Interstitial Nephritis - commonly a reaction to a drug. If it does not improve quickly after stopping the drug, this often responds to treatment with steroids . |
| Myeloma - Myeloma is a type of cancer of white blood cells. It often develops very slowly, and it can be treated. Some of the white blood cells that make antibodies overproduce a particular antibody. Fragments of these antibodies ('light chains', also called Bence Jones protein) leak into the urine and are toxic to the tubules. Further (detailed) information from the NKF |
| Poisons - a variety of different types. Lead poisoning is one example - fortunately this is rare now. Various kinds of poisonous mushrooms and herbs may also do this. |
| Drugs - some antibiotics (e.g. amphotericin, gentamicin) and some types of chemotherapy (e.g. cisplatin) can cause interstitial nephritis. |
| Inherited - rarely this type of kidney disease can run in families |
| Unknown - unfortunately it is often not possible to find a cause. This type of disease seems to be particularly common as a cause of renal failure in patients of Asian race within the UK. |

Acute tubular necrosis

This is the name given to a temporary injury to the kidney, in which many cells in the tubules die, but the tubules recover after a period lasting days to weeks. Dialysis treatment is often required to maintain health until recovery occurs.

| Acute Tubular Necrosis (ATN) is usually caused by some combination of the following: |
|---|
| very low blood pressure (eg caused by severe bleeding) |
| severe infection - usually with very low blood pressure |
| toxicity from drugs, chemicals, or infection |

Many patients with acute tubular necrosis develop it in hospital as a complication

of a severe illness or a major operation. The diagnosis of acute tubular necrosis is therefore usually quite obvious

No treatment has been found to speed recovery. It is a matter of waiting. In very severe cases the damage is sometimes not reversible.

Other interstitial kidney diseases

The inherited condition [polycystic kidney disease](#), and some other diseases causing cysts to form in the kidneys, affect the interstitium.

In **renal tubular acidosis** and some inherited conditions there is a problem with the way that tubules work. Sometimes this is due to diseases that cause interstitial nephritis, but sometimes these abnormalities occur on their own. Each of these is different and many of them are quite complicated. In renal tubular acidosis there is a problem with getting rid of acid. In the most common form, formation of kidney stones can be a problem.

In **Fanconi syndrome** the renal tubules don't work properly and you may lose more sodium, potassium, phosphate, bicarbonate and some other things into urine than normal. They may then need to be supplemented by pills or diet.

Acknowledgements: The author of this page was Neil Turner. It was first published in August 2001. The date it was last modified is shown in the footer.