

The kidney

What do the kidneys do?

The kidneys control the balance of water and salts in the body. They also play a part in filtering and excreting toxic and waste substances. Kidney damage (often called renal failure) is a common complication of myeloma. Up to 30% of patients will have some degree of kidney damage at diagnosis, and about 50% will develop kidney damage at some point during their illness. A small number of these patients will require kidney dialysis.

What are the causes of kidney damage in myeloma?

Damage can occur as a result of certain unique features associated with the disease and also from the effects of some drugs. If the kidneys are damaged then they are less able to break down waste products, which build up in the body and cause toxicity.

The abnormal immunoglobulin protein produced by myeloma cells (paraprotein) can damage the kidneys. About 15% to 20% of patients with myeloma produce incomplete immunoglobulins, containing only the light chain portion of the immunoglobulin (also known as Bence Jones protein). In excess this immunoglobulin fragment is particularly likely to damage the kidney. At first it damages the cells of the tiny tubules that are part of the kidney's filtering system. Eventually it can affect the tubules themselves blocking the flow of urine. Renal failure is more common in patients who have light chain myeloma but is also seen in patients whose myeloma cells make the whole immunoglobulin molecule (most commonly IgG or IgA).

Myeloma bone disease also results in the release of calcium from the bones, which can cause high levels of calcium in the blood (hypercalcaemia). High levels of calcium passing through the kidneys can damage them.

Certain medications may also affect the kidneys. These include non-steroidal anti-inflammatory drugs (NSAIDs), which may be bought over the counter. These include aspirin, ibuprofen (Nurofen) and similar drugs. Certain antibiotics and bisphosphonate treatments (Zometa, Aredia and Bonfos) can also affect the kidneys.

Dehydration from any cause can aggravate kidney damage and set up a vicious cycle of worsening renal failure. It is therefore very important to keep up a high fluid intake at all times. Dehydration can be a problem for myeloma patients with nausea, vomiting and poor fluid intake due to chemotherapy treatment.

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What are the symptoms of kidney damage?

Many of the symptoms of kidney damage associated with myeloma are quite non-specific and might be confused with symptoms related to other problems or treatments such as chemotherapy or fatigue.

It is therefore important to mention any new symptoms to your doctor straight away.

Symptoms of damage to the kidneys may include:

- Thirst
- Loss of appetite
- Nausea and vomiting
- Passing excessive amounts of urine
- Passing very little or no urine
- Swollen ankles
- Breathing problems

Kidney function will be monitored regularly at the hospital clinic, by simple blood tests, so any problems are usually picked up before symptoms occur. However, anyone who thinks that they may be developing problems with their kidneys should seek urgent medical advice.

What is the treatment for kidney damage?

Treatments aimed at preventing or reducing damage to the kidneys associated with myeloma include:

- Regular monitoring of kidney function is important to pick up problems as early as possible
- Drinking at least three litres (about five pints) of fluid per day – in many cases kidney damage is reversible and a high fluid intake may be enough in itself to arrest the process
- Avoidance of NSAIDs and careful use of drugs which are known to affect kidney function
- Correction of dehydration which, if severe, is done by giving fluid into a vein (intravenous); this would require a short stay in hospital
- Treatment of hypercalcaemia with bisphosphonates and fluids
- Rapid reduction of the paraprotein with effective treatment to reduce the burden on the kidneys – high-dose steroids are sometimes given initially as they may work more quickly than other drugs
- Plasmapheresis (plasma exchange) is a procedure that removes excessive amounts of paraprotein from the blood and may be used, in addition to chemotherapy or steroids, to reduce the levels of paraprotein more quickly in patients with severe renal failure – the benefit of this is however not yet firmly established
- In many patients the kidneys will recover with effective treatment of the myeloma – in a small number of patients kidney damage may be severe and permanent and will require regular treatment with dialysis

For further information about kidney disease and dialysis contact the National Kidney Federation on 0845 6010 209 or visit their website at www.kidney.org.uk

The future

Kidney damage is a common complication of myeloma and adds to the burden of the illness. It is very important to find the best way to prevent and treat patients with kidney damage.

The UK Myeloma Forum and the Renal Association are conducting a clinical study (The MERIT study) to evaluate the effectiveness of plasma exchange in patients with newly diagnosed myeloma and acute renal failure.

The purpose of this study is to find out if there is any benefit of plasma exchange in patients with myeloma and kidney damage. Ongoing studies will give doctors a greater understanding of how kidney damage affects myeloma patients and help them to determine what treatment options will be most effective.

About this Infosheet

The information in this Infosheet is not meant to replace the advice of your medical team. They are the people to ask if you have questions about your individual situation. All Myeloma UK's publications are extensively reviewed by patients and healthcare professionals prior to publication.

Other information available from Myeloma UK

Myeloma UK has a range of Essential Guides, Infoguides and Infosheets available covering many areas of myeloma, its treatment and management. To order your free copies, contact the **Myeloma Infoline** on **0800 980 3332**. This information is also available 24/7 on our website at www.myeloma.org.uk

If you would like to talk to someone about any aspect of myeloma, its treatment and management, call the **Myeloma Infoline** on **0800 980 3332**. Your call will be answered by Myeloma Nurse Specialists who are supported by medical and scientific advisors. The Myeloma Infoline is open from Monday to Friday, 9am to 5pm, and is free to phone from anywhere in the UK. From outside the UK, call +44 131 557 3332 (charged at normal rate).

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