

Team studies role of white blood cells in kidney failure

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Associate Professor Michael Hickey examining microscopic images of leukocytes travelling through kidneys.

Better targeted treatments for 20 per cent of renal failure patients are on the horizon following a key discovery about the role of white blood cells in kidney inflammation.

In a study published today in [Nature Medicine](#), researchers from Monash University tracked the movements of [white blood cells](#), or leukocytes, leading to a new understanding of their behaviour in both healthy and diseased kidneys.

Leukocytes play important protective roles in the body's immune system, but in some cases they cause damaging inflammation. Glomerulonephritis is an inflammatory disease of the kidney that can lead to the need for transplantation or regular dialysis. More than 20 per cent of end-stage renal failure cases result from glomerulonephritis.

Lead researcher, Associate Professor Michael Hickey of the University's Centre for [Inflammatory Diseases](#) in the Department of Medicine said the team used advanced microscopy techniques to

visualise the movements of leukocytes through the kidney.

"In order to manipulate a system, you must understand it. Now, we have a really clear understanding of the disease process and the molecules involved in the key steps," Associate Professor Hickey said.

"Contrary to conventional medical and scientific opinion, we found that [leukocytes](#) are constantly circulating through and patrolling the blood vessels within healthy kidneys. It was previously believed that they only arrived in the kidney during the development of disease. That's not the case. However, during disease they linger in the kidney during the course of their normal journey, become agitated and cause inflammation and [kidney damage](#)."

End-stage renal failure leads to significant health and personal impacts, including ongoing visits to a [dialysis unit](#) several times a week, or a significant wait for a donor.

Renal Physician and co-investigator Professor Richard Kitching said therapies to effectively target glomerulonephritis were needed before end-stage was reached.

"The treatments we have can be fairly effective, but they are non-specific and they often have unacceptable side effects," Professor Kitching said.

"Currently, we have to suppress the immune system to combat the inflammation and this immunosuppression leaves the body more prone to infections. Additionally, some of the drugs have metabolic side effects, such as weight gain and bone thinning.

"Now we have a better understanding of how the disease develops, we can identify targets for more specific drugs, with fewer side-effects."

The Australia and New Zealand Dialysis and Transplant Registry reported that 19,000 Australians had end-stage kidney failure at the end of 2010.

Provided by Monash University

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