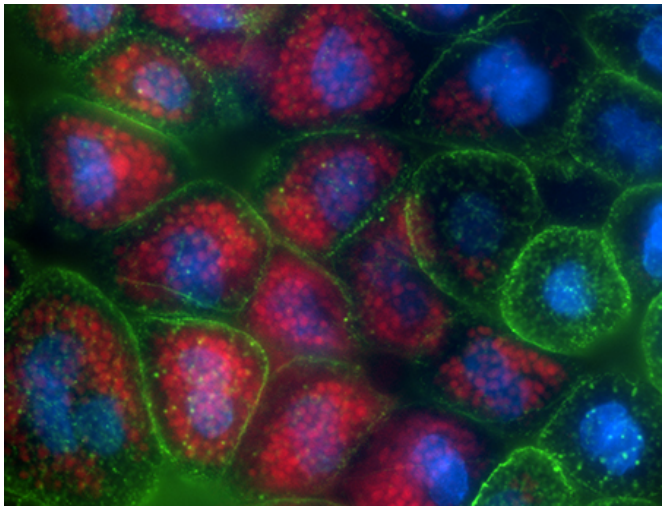
How UTIs in women may damage kidneys

8 November 2013



An image of the urothelial cell layer in a live human ureter, stained with wheat germ agglutinin conjugated to Oregon Green (green) to highlight cell membranes and DAPI (blue) to show nuclei. The red spheres are endocytic vesicles.

A scientist from the Institute of Translational Medicine has been awarded a £190,000 Fellowship by Kidney Research UK to investigate how the E.coli bacteria which cause Urinary Tract Infections (UTIs) move to the kidneys where they can cause considerable damage.

UTIs currently affect around half of all women in the UK. A recent survey by the charity of over 1,000 women showed that over half had experienced one or more UTI during their lifetime. Of those women, 58% said they usually treat a UTI with antibiotics, and almost 30% said they usually treat a UTI with over the counter medication.

Increasingly resistant

E.coli, the bacteria which cause 85% of UTI's, are becoming increasingly resistant to antibiotics that are currently available, meaning they may not clear an infection.

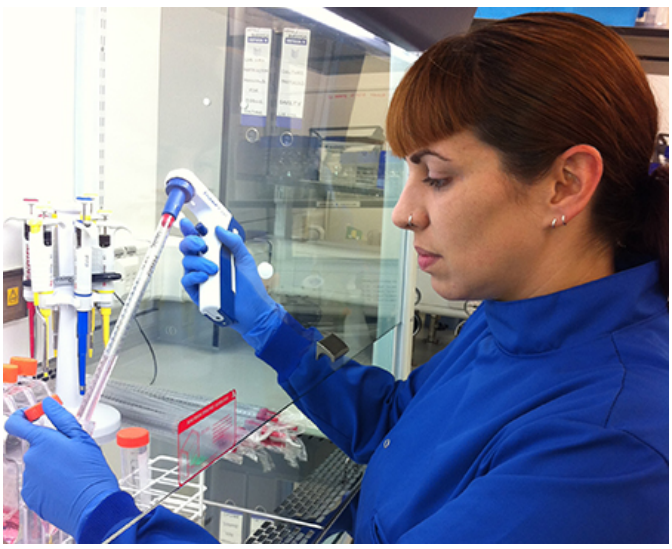
Equally worryingly, the 30% of women who are using over the counter medications to treat their UTI's are often unaware that these only mask the symptoms of the infection and do not cure it.

If the untreated UTI spreads to the upper urinary tract it can cause kidney damage.

Dr Rachel Floyd will investigate how E. coli, move to the kidneys and cause damage in the hope of finding new treatments before antibiotics become ineffective.

Previous studies have suggested that E. coli can 'hide' inside cells lining the bladder. This makes antibiotics ineffective and means the immune system doesn't respond effectively. Bacteria are not properly cleared from the bladder, which may be why some people get recurrent UTI's.

Dr Floyd will investigate if this also happens in humans using sections of ureters (the tubes that carry the urine to the bladder) from healthy people who have donated them for research.



Dr Rachel Floyd: “UTIs are a growing and painful problem that affect many women around the world.”

She will also study how bacteria can affect ureter function, causing an infection to spread. This will help her to understand which characteristics of E.coli are the most important when causing infection. She will try and identify which genes are essential for bacteria to infect humans and how these genes might be targeted with a new treatment to prevent UTIs.

Invest in research

Dr Floyd said: "UTIs are a growing and painful problem that affect many women around the world. Strains of E. coli that are resistant to multiple classes of antibiotics are becoming more prevalent. There is still no real effective treatment for these types of infections. I'm hoping to be able to identify alternative treatments before all current antibiotics used to treat UTI's become completely ineffective."

Elaine Davies, Head of Kidney Research UK's Research Operations, said: "We know that E.coli are becoming more resistant to antibiotics, so it's vital we invest in research now before it's too late. If we can identify the process by which E.coli cause infections, then we stand a very real chance of being able to treat them better, therefore preventing any subsequent kidney damage."

Provided by University of Liverpool