New study shows promise for analyzing bladder pain syndrome

February 23 2012

A pilot study led by University of Kentucky researchers shows that the gene expression analysis of urine sediment could provide a noninvasive way to analyze interstitial cystitis in some patients.

Interstitial cystitis, also known as bladder pain syndrome, is a debilitating disease of the urinary bladder. The disease can occur with or without bladder ulcers (called Hunner lesions). Interstitial cystitis is a difficult disease to study because animal models are limited, and human patients cannot ethically be subjected to invasive research procedures.

The researchers' goal was to develop a noninvasive method to analyze the bladder epithelium as objectively and directly as possible. During the study, the researchers used microarray technology to analyze cells shed into the urine as an alternative to bladder biopsies, which require anesthesia and have a small risk of bladder injury.

The results showed that urine cells from patients with Hunner lesions had a distinct gene signature for inflammation, similar to the results from a prior microarray study of bladder biopsies. The study was the first to show this inflammation objectively, but without biopsy, in Hunner lesion patients.

If these preliminary results are validated in future research, they may lead to a noninvasive biomarker for Hunner lesion-interstitial cystitis/bladder pain syndrome, says researcher Eric Blalock, associate professor in the Department of Molecular and Biomedical Pharmacology

at the UK College of Medicine.

"A crucial next step will be to determine the stability of this set of biomarkers across larger samples of the population," Blalock said. "And to also see if similar procedures could be used for early diagnosis and intervention in the disease process."

For interstitial cystitis patients without Hunner lesions, the gene signatures were similar to healthy controls.

"This is important in view of the ongoing debate whether the two types of interstitial cystitis really are different disorders," said UK urologist Deborah Erickson. "Prior studies showed the two patient types did have different findings on bladder biopsies. Our findings support the difference, but without the need for biopsy."

The study was published in the February issue of the *Journal of Urology* and was also selected for post-publication in the Faculty of 1000 (F1000), a global peer review group that identifies and evaluates the most important articles in biology and medical research publications. Selection places a researcher's work in F1000's library of the top 2 percent of published articles in biology and medicine.

Provided by University of Kentucky