*Nature Reviews Urology* | Published online 26 Apr 2016; doi:10.1038/nrurol.2016.81

PAIN

# MAPPing metabolomic markers for IC/BPS

Julien Capmeil/The Image Bank/Getty

Mass-spectrometry-based metabolomic profiling has revealed a urinary biochemical marker that is able to identify interstitial cystitis/bladder pain syndrome (IC/BPS) in women participating in the Multidisciplinary Approach to the Study of Chronic Pelvic Pain (MAPP) research network.

The pathophysiological mechanisms underlying IC/BPS are poorly understood and no uniformly effective treatments exist for this condition. Thus, discovering biomarkers to aid diagnosis and indicate disease mechanisms is of great interest.

Parker and colleagues used midstream urine samples collected from 40 women presenting with high IC/BPS symptom scores (the discovery cohort) and 40 age-matched women who did not have IC/BPS (the control cohort) who were taking part in the MAPP network study. They then characterized the metabolites present in the urine samples using liquid chromatography–mass spectrometry. Principal component analysis–discriminant analysis revealed only partial overlap between groups, which indicates that a distinctive urinary metabolite pattern is present in some patients with IC/BPS. The metabolite pattern distinguished two subgroups of patients, those whose urinary metabolome is similar to women without IC/BPS (subgroup one) and those whose metabolome is distinct (subgroup two). The symptom and pain score of the women in subgroup two were significantly higher than those in subgroup one, which is indicative of the existence of phenotypically distinctive IC/BPS subgroups that have biochemical differences.

Etiocholan-3α-ol-17-one (Etio-S) — a testosterone derivative — was identified as a potential marker, as it was more abundant in samples from subgroup two than subgroup one. Urinary levels of this molecule were able to distinguish patients with IC/BPS from those without and patients in subgroup one from those in subgroup two.

In a blinded validation cohort consisting of samples from 80 women, 40 with and 40 without IC/BPS, increased Etio-S urine concentration was significantly associated with IC/BPS and predicted the presence of this disorder with a specificity of 87.4% and a sensitivity of 91.2%. Follow-up analysis showed that biochemical changes associated with Etio-S persisted for up to 12 months.

Etio-S and its associated metabolites could provide insights into the pathophysiological processes that contribute to IC/BPS and help in predicting its presence.

*Louise Stone*

**ORIGINAL ARTICLE** Parker, K. S. *et al.* Urinary metabolomics identifies a molecular correlate of interstitial cystitis/bladder pain syndrome in a multidisciplinary approach to the study of chronic pelvic pain (MAPP) research network cohort. *EBioMedicine* http://dx.doi.org/10.1016/j.ebiom.2016.03.040 (2016)