

RISK FACTORS

Urinary, metabolic and physical health linked

Two new studies have confirmed suspected associations between lower urinary tract symptoms (LUTS), the metabolic syndrome, and the risk of falls.

Recent research attention has focused on the ‘beyond the bladder’ hypothesis, which proposes that factors outside the urinary tract influence its function. Associations between LUTS and chronic conditions, such as diabetes and heart disease, have been shown. As the metabolic syndrome shares characteristics with both of these conditions (namely insulin resistance and cardiovascular risk factors), Varant Kupelian and colleagues assumed that a link between the syndrome and LUTS could also be found.

Kupelian’s team analyzed data collected from 1,899 men during the Boston Area Community Health Survey. The overall prevalences of LUTS and the metabolic syndrome were similar to those reported previously. Participants with LUTS—even mild symptoms—were more likely to have the metabolic syndrome (odds ratio 1.68). The likelihood of being affected by the syndrome tended to increase as the severity of urinary symptoms worsened.

Several notable findings emerged when components of the LUTS assessment tool (the American Urological Association [AUA] symptom index) were analyzed individually. The association between the metabolic syndrome and voiding symptoms was strong (odds ratio 1.73 for

a voiding symptom score ≥ 5). By contrast, no link could be established with storage problems given a severity score ≥ 4 on the AUA scale. On the basis of a suggestion made by Brett Laven in an Editorial that accompanied the Kupelian *et al.* paper in the August issue of the *Journal of Urology*, the authors re-analyzed their data after controlling for the use of α -blockers. Their conclusions were unchanged.

Perhaps the most important aspect of this work is its support for the growing body of evidence that modifiable risk factors have a role in the development of LUTS. Untangling the complex web of physiological interactions that contribute to deterioration of urinary health will be necessary before modifiable risk factors, such as obesity and type 2 diabetes, can be confidently targeted for therapeutic intervention.

To this end, Kupelian and his team proposed avenues for further investigation. In animals, sustained hyperglycemia leads to preferential loss of parasympathetic—as opposed to sympathetic—neurons from the pelvic ganglion. The resulting excessive sympathetic tone might contribute to the onset of obstructive urinary symptoms. Prostate growth leading to voiding problems might also be promoted by hyperinsulinemia-induced increases in the level of insulin-like growth factor.

A somewhat surprising finding of the Kupelian *et al.* study is that the association

between the metabolic syndrome and LUTS tended to be strongest in men aged ≤ 60 years. This contradicts earlier studies, in which it was older men with LUTS who were more likely to have the syndrome.

Older men with LUTS were the demographic studied by J. Kellogg Parsons and colleagues in their assessment of urinary health and the likelihood of falls. Parsons’ group used the AUA symptom index to evaluate nearly 6,000 participants in the Osteoporotic Fractures in Men study. Moderate and severe LUTS were significantly associated with an increased risk of falls (up to 33%) among community-dwelling men. Urgency, straining and nocturia were the strongest predictors of falls. Controlling for urological medications did not alter the results.

According to the lead author, “this is the first study to demonstrate an association of chronic urinary symptoms with a serious and completely preventable nonurological morbidity in older men.” It is concerning that the incidence of falls was not reduced by prescription of LUTS-relieving medication. The authors speculate that the beneficial effects of α -blockers and anticholinergics might be obscured by the slightly increased likelihood of dizziness and syncope associated with these drugs.

Parsons concludes that “identification of urinary symptoms in older men may help identify those at greatest risk of falling”. Kupelian and colleagues also suggest modification of current practice on the basis of their findings. “Patients who present with components of metabolic dysfunction should be routinely queried with respect to urological function,” they write.

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Original articles Kupelian, V. *et al.* Association of lower urinary tract symptoms and the metabolic syndrome: results from the Boston Area Community Health Survey. *J. Urol.* **182**, 616–625 (2009).
Parsons, J. K. *et al.* Lower urinary tract symptoms increase the risk of falls in older men. *BJU Int.* **104**, 63–68 (2009).

