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REPLY

Unravelling Fowler's syndrome—current pathophysiological concepts

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With regard to our Review of Fowler's syndrome (Fowler's syndrome—a cause of unexplained urinary retention in young women? *Nat. Rev. Urol.* **11**, 87–98; 2014),[1] we would like to thank Jae Shin for his correspondence (Fowler's syndrome—progesterone deficiency or oestrogen excess? *Nat. Rev. Urol.* doi:10.1038/nrurol.2013.277-c1).[2] Unexplained urinary retention in women is very challenging to manage, and our understanding of this problem has progressed little since the syndrome was first described in 1988.[3]

Urinary retention is thought to result from a poorly relaxing external urethral sphincter, which results in inhibition of detrusor function. The theory of hormonal channelopathy that was initially proposed by Fowler's group is one of only a few, speculative attempts at explaining the occurrence of urinary retention.[4,5] This theory postulated that a reduction of serum progesterone, associated with the polycystic ovarian syndrome (PCOS), resulted in destabilization of sphincter muscle membranes, leading to autonomous electrical activity. Other workers have suggested that urinary retention in these women is a result of a maladaptive behaviour, and that it does not have an organic origin, as discussed in our article.[1]

The characteristic findings on sphincter electromyography that are described in Fowler's syndrome[6] have been observed with some frequency (≤53%) in unaffected women.[7–9] Certainly, this calls into question the specificity of concentric needle electromyography. More recently, in a series of 169 women with chronic urinary retention undergoing sacral neuromodulation, the electromyographic findings were not prognostic of outcome,[10] raising further doubt as to whether it is even necessary to perform this test.

Dr Shin's postulate[2] provides interesting food for thought. He suggests that hyperoestrogenism associated with PCOS is a possible contributor to voiding dysfunction in women with Fowler's syndrome. Certainly, there is some evidence of oestrogen-related voiding impairment in animal studies, although the mechanisms by which this leads to sphincteric dysfunction are unclear. Furthermore, the association of Fowler's syndrome with PCOS is somewhat tenuous, when the common occurrence of polycystic ovaries in women of this age group is taken into account. Moreover, data are lacking correlating serum sex steroid levels to urodynamic and electromyographic findings in women with PCOS, with and without Fowler's syndrome.

Interestingly, sacral neuromodulation has re-established voiding and improved quality of life in a proportion of women with unexplained urinary retention, leading to the suggestion that Fowler's syndrome involves a negative inhibition on the normal afferent traffic to the brain, which is abolished by sacral neuromodulation.[11] Clearly, the aetiopathophysiology of this syndrome remains enigmatic and requires further elucidation in the future.

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Competing interests

C.R.C. is a consultant for Allergan, AMS, Astellas, Lilly, ONO, Pfizer and Recordati, and a researcher, speaker and trial participant for Allergan, Astellas, Pfizer and Recordati. N.I.O. declares no competing interests.

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