World Journal of Urology (2019) 37:2811–2812
https://doi.org/10.1007/s00345-019-02832-5

LETTER TO THE EDITOR

Is there enough evidence to support sacral neuromodulation as a viable treatment option in children and adolescents with neurogenic lower urinary tract dysfunction?

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Received: 27 May 2019 / Accepted: 29 May 2019 / Published online: 3 June 2019

Dear Editor,

Sacral neuromodulation is not a novelty in children with lower urinary tract dysfunction (LUTD), still the published experience on its use in children with neurogenic LUTD (NLUTD) is seriously limited. A single, randomized, controlled study (RCT) in 42 children with NLUTD could not demonstrate significant improvements in the intervention group compared to the control patients, with only one patient achieving complete continence following implantation [1]. Improvements were recorded in bladder compliance and functional capacity but they were short lived, as well as in bladder sensation and incidence of urinary tract infections in the implant group as opposed to no improvement in the control group; the latter improvements, however, were limited to less than 50% of implanted patients. In lack of further RCTs, the method remains largely investigational in children with NLUTD [2]; hence, novel data are welcome.

In the current manuscript, the authors present a single-centre experience from a small series of patients with a mixed aetiology of NLUTD; nevertheless, all causes were related to lumbosacral congenital anomalies and incomplete spinal cord injury (SCI) [3]. The majority of the study patients suffered from detrusor overactivity and/or low compliance bladder in addition to incomplete bladder emptying or even complete retention, representative urodynamic findings of such patient population. Some of the results are quite impressive as 50% of those children who passed successfully the PNE test could stop the catheterizations and the mean 24-h leakage was dramatically reduced. However, only 61.5% passed successfully the PNE test and of them 85% achieved a measurable clinical response, thus leaving only about half (53%) of the patients with a positive response from SNM. Both the test phase result and the long-term efficacy rate of the permanent implant are somewhat lower than the pooled 68% success rate of the test phase and the 92% success rate reported for the permanent implant in a meta-analysis of SNM in NLUTD patients (62.5% end response rate) [4]. Although the PNE test serves as an indirect neurophysiological test for the function of sacral nerves, classical neurophysiological testing of the sacral nerves prior to SNM might be an idea to improve patient selection for the two-staged SNM and also for cutting down on the costs of an unnecessary PNE or first-stage SNM test.

Sacral neuromodulation in children seems to be plagued by a large reoperation rate. An aspect which needs attention is the changing anatomy and physical activities in children and adolescents and their potential effect on the position of the lead [5, 6]. Although body growth may be hampered in these younger patients, it is important to take into consideration by both the operating physicians and the young patients' families. Future research in the field might be able to tackle such technical considerations.

In a similar context, neurological stability of the patient for an adequate period of time after the spinal trauma or surgery is also a basic requirement. The minimum interval between spinal cord trauma or the last surgical intervention on spinal cord and the sacral neuromodulation in this study was 12 months, which is considered to be an adequate period for the finalization of the reorganization of neuronal regeneration and reflexes following trauma or surgery.

It is often the case in patients with lumbosacral congenital anomalies or SCI to also suffer from a degree of sphincteric incompetence, which exacerbates the incontinence problem and minimizes the effect of oral and other bladder treatments. In the current study, apparently only one patient

This comment refers to the article available at https://doi.org/10.1007/s00345-019-02721-x.

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suffered from a weak sphincter, thus urodynamic and clinical results may not have been affected.

Overall, children and adolescents with NLUTD constitute a difficult-to-treat population when using SNM, with several factors implicated in efficacy and safety, including an often mixed urodynamic picture from the bladder and urethra as well as technical aspects related to body growth and neurological stability. More importantly, the currently available data are extremely scarce and the need for further studies in larger patient groups is certainly pressing.

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