

Peer Review File

Article Information: <http://dx.doi.org/10.21037/apm-21-1132>

Reviewer A

In the present study, the authors aimed to explore the effect of short-term SNM treatment on the anatomy and function of the lower urinary tract in a patient with NLUTD, using a case report. They suggested that short-term SNM can significantly improve lower urinary tract function and reduce VUR in patients with NLUTD with VUR. Although this is an interesting study, several issues should be addressed.

#1. In the Abstract, “Sacral neuromodulation has proven to be an effective treatment for neurogenic lower urinary tract dysfunction.” ◇ SNM works primarily in the patients with NLUTD as it just suppresses NDO, however, there is a lack of evidence that SNM improves bladder compliance in the patients with severe bladder trabeculation such as the formation of Christmas tree as shown in this study.

Response:

Bladder compliance refers to the parameter obtained by dividing the change in bladder volume by the change in detrusor pressure during this volume change.

As you said, there is not enough evidence to support that SNM can improve bladder compliance in NLUTD patients. However, there have been research reports that in animal experiments, SNM has been proven to increase bladder capacity and reduce bladder pressure [1]. In NLUTD patients with VUR, studies have also shown that SNM can cure or reduce VUR by improving DO and/or bladder compliance [2].

Therefore, we believe that through research verification and supplementation, conclusions with stronger evidence levels will be drawn in the future, so as to provide clinicians with new treatment ideas.

References

[1] X Li, Liao L, Chen G, et al. Effects of Acute Sacral Neuromodulation at Different Frequencies on Bladder Overactivity in Pigs[J]. Int Neurourol J, 2017, 21(2): 102-108.

[2] G Chen, Liao L, Wang Y, et al. Urodynamic findings during the filling phase in neurogenic bladder patients with or without vesicoureteral reflux who have undergone sacral neuromodulation[J]. Neurourol Urodyn, 2020, 39(5): 1410-1416.

#2. The patient in this study has not specified what neurological conditions were, and is not presented with any objective clinical parameters such as FVC and UFM. Therefore, it is unclear whether the patient's symptoms have improved in conjunction with urodynamic changes.

Response:

Changes have been made in the text.

Changes in the text: Page 4, Line 83; Page 5-6, Line 104-106, Line 120-122.

#3. The changes of bladder compliance in urodynamic graph of Fig. 1 and Fig. 2, the most important results in this study, are not clearly visible, and it is difficult to see if there is real improvement of bladder compliance after applying SNM.

Response:

The improvement of bladder compliance during the storage period can be visually observed in Figure 1 and Figure 2, and upload the original file of the patient's urodynamic examination as an attachment, please review.

Changes in the text: Attachment 1.

#4. In low-compliant bladder with severe trabeculation as seen in the case patient, no plausible explanation is presented in which SNM improves bladder compliance in the Discussion.

Response:

This is explained in the discussion section of this study. (Page 8, Line154-159).

#5. If you present the similar results in a larger group of patients in the future, it could be a more valuable evidence.

Response:

Recently, our center is actively accumulating the number of such patients. We believe that we can get more accurate conclusions after expanding the sample size in the future, so as to provide reference for clinicians.

Reviewer B

This is a case report describing changes in urodynamic parameters and clinical symptoms in a 63 year old female with neurogenic LUT dysfunction treated with sacral neuromodulation.

The case report is nicely written. One may limitation is that there is already data on this topic (as the authors cite, Chen 2020). The authors could improve the paper by citing references next to several sentences (abstract line 24 : "SNS has proven..." and intro line 57 " The most common...". Furthermore, the authors could improve the paper by using the ICS terminology throughout (there are likely different terms used as different institutions (i.e. the bladder wall was "rough"; the patient was satisfied with the "curative" effect... "intravesical "hypertension"

Response:

Changes have been made in the paper.

Changes in the text: Page 3, Line 57.

Reviewer C

Line 42 & line 174: "short term sacral neuromodulation". This term is confusing. SNM is intended for long term use. Can you elaborate on this point or exclude?

Response:

As you explained, SNM is intended for long term use. However, the purpose of this study is to observe whether the short-term experience therapy of SNM will affect the VUDS examination results of NLUTD patients. There are very few similar studies, and there is only one article in 2020 [1].

References

[1] I-M Groenendijk, Groen J, Scheepe J-R, et al. Acute effect of sacral neuromodulation for treatment of detrusor overactivity on urodynamic parameters[J]. *Neurourol Urodyn*, 2020, 39(2): 695-701.

line 84: what oral drugs are you referring to? Alpha blockers or anticholinergics? Can you clarify if she was on these medications at the time of vUDS

Response:

The patient had taken anticholinergic drugs in the past, and stopped using it after she felt ineffective. The drug had been stopped for at least 3 months at the time of VUDS examination.

Line 99: "bladder sensitivity-- decreased"- unclear what this means. Please give bladder volumes for reported first sensation, first desire, strong desire, max capacity in order to fully describe this findings.

Response:

Modifications have been made in the text.

Changes in the text: Page 5-6, Line 104-106, Line 120-122.

* it would be important to mention whether the patient did or did not have a detrusor leak point. Line 115 & Line 155: a compliance of 10.5 is still poor by common standards. IN fact many would say a compliance of less than 20 ml/cmH20 is abnormal. Secondly a Detrusor leak point of >40cmh20 is concerning for upper track deterioration, so if this patient truly has no DLPP despite reaching a pdet of 72 cmH20 during filling this would still not be called a safe bladder. If you are able to show that the patient can reliably Cath at volumes that were within a safe bladder pressure (<40 cmH20) and prior to the 340ml that she has VUR then possibly you could claim that the bladder is now safer after SNM. However as stated currently it seems that you made her bladder capacity larger, however otherwise has a poorly compliant, high pressure bladder that places her kidneys at risk. Please explain your treatment plan further in the "treatment and outcome" section to demonstrate bladder safety.

Response:

The original meaning of the original text refers to the improvement in compliance after treatment compared to before SNM treatment. However, the bladder compliance after SNM treatment still did not reach the normal standard (≥ 20 ml/cmH20). Because the patient had no symptoms of urinary incontinence, the DLPP index was not included in the urodynamic examination. In addition, the treatment plan has been elaborated in the discussion section. (Page 8, Line154-159).

Line 169- "urine leak" is this a detrusor leak point you are describing because that is actually important to mention in your results

Response:

Here, urine leakage refers to that part of the patient's urine is discharged out of the collector during the

voiding period. At this time, the patient is actively urinating instead of urinary incontinence.

Reviewer D

Great study idea. I feel that more than one patient should have been chosen. Sacral nerve stimulation is mainly to treat over active bladder or idiopathic retention, so that group of patients would be ideal to study as per NICE guidelines. Neurogenic bladder patients typically have a poor success rate so research in these group of patients is a great idea. Could this have been done with standard urodynamics or was it done video to specifically look for reflux? Just thinking of the radiation risk for patients.

Response:

Dear reviewers, thank you for your affirmation. Our center routinely performs VUDS examinations for such patients at risk of reflux, aiming to clarify the safe capacity of the bladder, guide clinical diagnosis and treatment, and reduce the risk of upper urinary tract injury. Compared with the protection of upper urinary tract function, it is believed that radiation is less harmful. Of course, these are also carried out with the patient's full informed consent.