

MEASUREMENT OF IPSS-STORAGE AND IPSS-EMPTY SUBSCORES COULD HELP TO DIFFERENTIATE BLADDER RELATED AND URETHRAL-RELATED CONDITIONS IN MEN WITH LUTS FOR INITIAL MEDICAL TREATMENT

Hypothesis / aims of study

Lower urinary tract symptoms (LUTS) in men may be caused by bladder or urethral conditions. Total International Prostate Symptom score (IPSS) correlates poorly with bladder outlet obstruction (BOO). It is difficult to distinguish the causes of male LUTS merely based on their clinical symptoms, and a subset of men who receive treatment for prostate conditions may have persistent OAB symptoms. Detailed urological investigations are mandatory for exact diagnosis of lower urinary tract dysfunctions (LUTD). If we divide the IPSS into storage (IPSS-S) and empty (IPSS-E) symptom scores, we might be able to differentiate LUTS due to bladder- or urethral-related conditions and medical treatment aiming at these different conditions might be given without urological investigations.

Study design, materials and methods

A total of 87 men with LUTS were enrolled and 15 age-matched men without LUTS served as controls. The IPSS-S and IPSS-E were recorded separately according to the validated Chinese version of the International Continence Society recommended IPSS. The patients were then measured with total prostate volume (TPV), transition zone index (TZI), maximum flow rate (Qmax), postvoid residual volume (PVR), and determined the causes of LUTS based on these urological investigations. The IPSS-E and IPSS-S of each patient were then plotted in a LUTS symptom score plot (Fig.1). The IPSS-E to IPSS-S ratio was calculated and compared among subgroups. Doxazosin 4mg and tolterodine 4mg QD was given to patients based on the initial diagnosis of urethral- and bladder-related condition, respectively. The treatment outcome was considered as having improvement if they reported to have a reduction of IPSS-E or IPSS-S subscore by 25% and an IPSS quality of life index improved by 2 points at 1 month after treatment. Statistical analysis was performed by Wilcoxon signed rank test between bladder- and urethral-related LUTD subgroups. Pearson's correlation was used for analysis the association between variables. Receiver operating characteristics (ROC) curves were used for calculation of areas below curves and analysis the sensitivity and specificity of cut-off values of IPSS-E, IPSS-S, IPSS-total and IPSS-E/S ratio in differentiation of different LUTD subgroups. (Fig.2)

Results

The mean age of patients was 67 years. The mean IPSS-E/S ratio was <1.0 (0.71 ± 0.71 , $n=41$) in patients with hypersensitive bladder or overactive bladder, whereas patients with BPH-BOO (1.99 ± 1.32 , $n=25$) and non-BPH voiding dysfunction (2.92 ± 2.55 , $n=21$) had an IPSS E/S ratio >1.0 ($p=0.000$). We then separated patients into two groups according to IPSS- E/S. Patients with IPSS- E/S >1 was suspected to have LUTD due to BPH-BOO or non-BPH voiding dysfunction predominant, and patients with IPSS- E/S ≤ 1 had LUTD due to OAB or HSB predominant. When we compared parameters between these two groups, it was interesting that PVR, TPV, TZI, and PSA were similar between these two subgroups, although patients in E/S >1 subgroup had a higher Qmax. We constructed receiver operating characteristics (ROC) curves using different methods for predicting BPH/non-BPH voiding dysfunction and OAB/HSB in our patients. An IPSS- E./S ≤ 1.0 was noted in 80% of patients with bladder related LUTD and IPSS- E/S >1.0 in 76% of patients with BPH-BOO and non-BPH voiding dysfunction. According to the initial differential diagnosis and medication given, 77% of patients reported an improved outcome in both groups.

Interpretation of results

In this study, we conducted a new method using IPSS- E/S to differentiate the bladder and urethral related LUTD in men with LUTS. In the preliminary results, total and empty IPSS correlates with Qmax, while storage IPSS and IPSS- E/S ratio did not associate with Qmax, PVR, TPV, TZI, or PSA. The results were compatible with the findings that OAB symptoms correlated poorly with parameters about prostate. The area under ROC curve was greatest when we use IPSS- E/S to predict if BOO/non-BPH voiding dysfunction or OAB/HSB. IPSS- E/S maybe a better method to predict urethral-related LUTD and bladder-related LUTD compared with other noninvasive method. Although this diagnostic method can not replace UDS or VUDS, it may be considered an easy method in first-line use for general practitioners to treat men with LUTS. IPSS- E/S ratio is a simple method to differentiate male LUTS, and our preliminary treatment results showed 77% improvement in both groups. We know that the IPSS- E/S ratio is not a perfect method to diagnosis BOO and OAB, and many of these patients have both conditions. However, we believe the IPSS- E/S ratio is a simple and useful method for the first-line physicians, especially those who have no urological diagnostic equipments. Using IPSS- E/S ratio to guide initial treatment for male LUTS is safe and result in satisfactory outcome. Further urological investigations or combination therapy can be reserved for those who fail the initial treatment based on IPSS- E/S ratio. However, larger and longer placebo-controlled studies are still needed.

Concluding message

Using IPSS-E/S ratio can help to differentiate bladder- and urethra-related conditions, and initial medication can be given with excellent therapeutic outcome. Further urological investigations can be reserved for those who failed the initial treatment based on IPSS-E/S ratio.

Figure 1. The IPSS-E and IPSS-S of each patient were plotted in a LUTS symptom score plot.

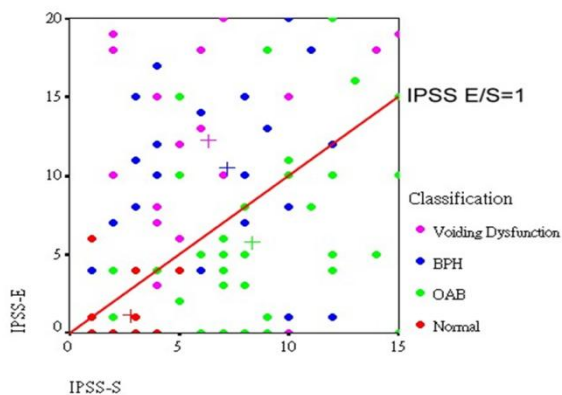
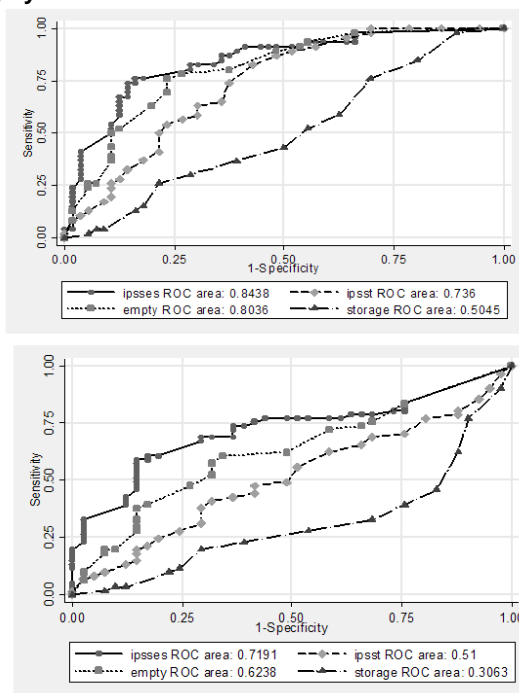


Figure 3 Compare receiver operating characteristics (ROC) curves using different methods for predicting BPH/non-BPH voiding dysfunction and OAB/HSB.



Specify source of funding or grant	None
Is this a clinical trial?	No
What were the subjects in the study?	HUMAN
Was this study approved by an ethics committee?	Yes
Specify Name of Ethics Committee	Institutional Review Board of Tzu Chi University and Tzu Chi General Hospital, Hualien, Taiwan
Was the Declaration of Helsinki followed?	Yes
Was informed consent obtained from the patients?	Yes