

REPRODUCIBILITY OF THE MAXIMUM BLADDER CAPACITY MEASURED WITH FREQUENCY VOLUME CHART, UROFLOWMETRY AND URODYNAMICS IN WOMEN WITH IDIOPATHIC DETRUSOR OVERACTIVITY

Hypothesis / aims of study

Maximum bladder capacity (MBC) serves as a useful clinical parameter in the management of women with overactive bladder (OAB). In clinical practice of the patients with idiopathic detrusor overactivity (IDO), sometimes, estimated MBC might show a large difference according to various measurement tools. We aimed to identify the reproducibility of MBC measured with frequency volume chart (FVC), uroflowmetry (UFM) and urodynamics (UDS) in women with IDO.

Study design, materials and methods

Women with clinical symptoms of OAB who received UDS were included. Of the patients, excluding women with urinary tract infection, neurologic abnormality that affects voiding cycle, bladder outlet obstruction, detrusor underactivity, surgery on urinary tract, or incomplete UDS, women showing IDO in the filling cystometry were included into the final analysis. We collected data on maximal voided volume from 3-day FVC, sum of voided volume and post-void residual volume from UFM, and maximum cystometric capacity from the filling cystometry before a commencement of antimuscarinic treatment. The reproducibility of the MBC determined by each measurement tool was assessed using intraclass correlation coefficient (ICC). ICC's interpretation is : <0.4 poor, 0.4-0.75 acceptable, or >0.75 excellent.

Results

140 women with clinical symptoms of OAB and UDS-proven IDO were analyzed. The mean age was 66.8 years (range 25 to 95). Mean MBC determined by each measurement tool was 325.7cc in FVC, 244.8cc in UFM, and 293.1cc in UDS. In comparative analysis, UFM-MBC was significantly different with FVC- and UDS-MBC ($p < 0.001$ and $p = 0.002$, respectively; Paired t-test). However, There was no significant difference between FVC- and UDS-MBC ($p = 0.398$). Table shows acceptable MBC reproducibility between FVC and UDS (ICC = 0.541). On the other hand, MBC reproducibility between UFM and FVC, UDS was poor (ICC = 0.371 and 0.384, respectively).

Table. The reproducibility among the different methods for measuring maximum bladder capacity

	MBC (cc) (mean±SD)	ICC with FVC	ICC with UFM	ICC with UDS
FVC	325.7 ± 134.3		0.371 (95% CI: 0.007-0.601)	0.541 (95% CI: 0.272-0.711)
UFM	244.8 ± 155.4	0.371 (95% CI: 0.007-0.601)		0.384 (95% CI: 0.129-0.564)
UDS	293.1 ± 135.5	0.541 (95% CI: 0.272-0.711)	0.384 (95% CI: 0.129-0.564)	

MBC: maximum bladder capacity, FVC: frequency volume chart, UFM: uroflowmetry, UDS: urodynamics, ICC: intraclass correlation coefficient.

Interpretation of results

MBC measured with UFM was significantly lower than that with FVC and UDS, and showed poor reproducibility with FVC and UDS.

Concluding message

Although difference exists in the real estimates of MBC determined by FVC, UFM and UDS, measurement of MBC showed acceptable reproducibility between FVC and UDS in women with IDO.

<i>Specify source of funding or grant</i>	None
<i>Is this a clinical trial?</i>	No
<i>What were the subjects in the study?</i>	HUMAN
<i>Was this study approved by an ethics committee?</i>	Yes
<i>Specify Name of Ethics Committee</i>	Institutional Review Board of Seoul National University Bundang Hospital
<i>Was the Declaration of Helsinki followed?</i>	Yes
<i>Was informed consent obtained from the patients?</i>	No