

173

Authors: Guus Kramer, Manfred Stöhrer

Institution: Urodynamic Unit, Department of Urology, Berufsgenossenschaftliche Unfallklinik Murnau

Title: TYPICAL VALUE RANGES OF PRESSURES, INFUSED VOLUME, AND COMPLIANCE DURING THE FILLING PHASE IN NEUROGENIC LOWER URINARY TRACT DYSFUNCTION

Aim of Study:

During the Denver meeting of this Society, Liao et al. (1999) presented typical value ranges of some urodynamic parameters during the filling phase in males with lower urinary tract symptoms. In their discussion they asked for the definition of those typical value ranges also in other patient groups. We have used our data base on patients with neurogenic lower urinary tract dysfunction to address this question for the neurogenic patient group.

Material and methods:

Video-urodynamics is performed in our house by two experienced urodynamic technicians, and is under regular quality control. Routinely, the patients are supine during the investigation. The usual filling rate is 20 ml/min of a body-warm contrast medium. A semi-random selection was made from our data base of urodynamic investigations in patients with neurogenic lower urinary tract dysfunction over the years 1997-2000.

Because some of the data were not routinely recorded in the data base and needed to be entered manually, this selection was made on the patient's name starting with letters A-C for the period until September 2000. This amounted to 771 urodynamic recordings, or about 7½% of the total amount. For 524 recordings since then, or 78% of urodynamic investigations, the data were available directly from the data base, the missing 22% being for the major part being a different type urodynamic investigation (mainly ice water tests and free flow studies). As a starting point for this continuing study, the raw data were used, not collated from the entry forms or re-analysed against the original urodynamic traces, but for the correction of obvious data base entry errors. Also, the data are not stratified for the type of neurogenic lower urinary tract dysfunction.

Results:

The parameters in table 1 are the same as in the reference: p_{ves} , p_{abd} , and p_{det} at start and at end of filling, V_{infus} at end of filling, detrusor compliance. The mean values of p_{ves} and p_{abd} at the start of filling are 19.5 cm H₂O and about 34 cm H₂O in the reference. This is caused by the supine patient position in our study against sitting or standing in the reference.

Table 1. Descriptive data of urodynamic parameters.

Start filling	Mean ± SD	Median	50% Range	75% Range	95% Range
P_{ves,0} (cm H₂O)	19.5 ± 10.0	20	15 25	9 30	1 40
P_{det,0} (cm H₂O)	0.0 ± 3.6	0	0	-2 2	-4 6
P_{abd,0} (cm H₂O)	19.5 ± 9.8	20	15 25	9 30	1 41
End filling					
P_{ves,ef} (cm H₂O)	37.9 ± 16.6	35	15 45	10 57	7 47
P_{det,ef} (cm H₂O)	12.0 ± 11.3	10	7 14	5 20	2 37
P_{abd,ef} (cm H₂O)	26.3 ± 13.3	25	16 35	11 45	6 55
V_{infus} (ml)	383 ± 179	400	256 500	151 550	70 700
Compliance (ml/cm H₂O)	48.8 ± 55.5	37	21 60	12 100	2 155

The higher increase in average p_{det} between start and end of filling in our population (12.0 cm H₂O against 5.9 cm H₂O) is caused only in part by the higher volume infused at the end of filling (383 ml against 262 ml). Detrusor distensibility in the unselected neurogenic population may be decreased, the compliance is smaller indeed (48.8 ml/cm H₂O against 58.5 ml/cm H₂O). A decreased bladder sensation of the neurogenic patient may be conjectured from the fact that the infused volume at the end of filling (V_{infus}) is larger in this population.

Conclusion:

The difference in intravesical and in abdominal pressures between the supine and the sitting/standing position of the patient is demonstrated. Except for differences in detrusor distensibility and in bladder sensation, the basic data for typical values of urodynamic parameters in the filling phase appear comparable between unselected neurogenic patients and men with lower urinary tract symptoms. It may be conjectured that, after stratification for reduced detrusor activity or increased detrusor activity, the two subgroups will show distinct differences in the end filling data.

It should be stressed here that the data for this study were not submitted to an independent quality check before these data were calculated. This offers the opportunity to check at a later time the entrance quality of the raw urodynamic data against this same set of data of which the quality has been independently rechecked.

Reference:

Liao L, Kirschner-Hermanns R, Schäfer W. 1999. Urodynamic quality control: Quantitative plausibility control with typical value ranges. *Neurourol Urodyn* 18: 365-366.