731. ANALYSIS OF DURATION AND STRENGTH OF THE DETRUSOR CONTRACTION IN
THE FEMALE DETRUSOR UNDERACTIVITY

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Introduction

To assess strenght, duration and main characteristics of detrusor contraction (DC) in DUA women.

Materials and Methods

This was a comparative prospective study (2021-2022) on DC characteristics in females with DUA (DUA-G) compared with those of women without DUA (Control Group – CG) underwent urodynamics (UD) for LUTD. DUA was defined when at least one of the following UD criteria was met: 1) Jeong; 2) Abarbanel and Marcus; 3) BVE criteria; 4) PIP1. Statistical analisis tests were: T-Test, Youden, AUC and sensibility/specificity calculation.

Results

Data were completed on 206 women: 104 DUA (50.5%), 102 CG (49.5%). Data on main DC charachteristics of the 2 groups are reported in table 1. Median DC duration was 61.5 sec in DUA-G and 73 sec in CG, median voiding duration 50 sec in DUA-G and 38 sec in CG. Median Pdet/Qmax was 12.5 cmH2O in DUA-G and 20 cmH20 in CG. Thresholds of Ratio DC duration/voiding time <1.375, Pdet/Qmax < 14 cmH2O, Qmax < 14ml/s had the higher AUC and good both sensibility and specificity. Combining these parameters, in CG 49% had none of the markers below these cut-off, 41.2% with at least 1, 8.8% 2, 0.9% 3. In DUA-G the rate of women with none parameter with lower cut-off was 3.9%, at least 1 31.4%, 2 48%, all 18.6%. DC duration lower than 45 sec showed the higher specificity for DUA (90%) but with a very low sensibility (28%).

Interpretation of results

As expected and according to ICS definition, duration (1 min) and strenght (12 cmH20) of DC were significantly reduced in DUA-G, with prolonged voiding time and larger post-void residual of urine.

In the average, DUA DC lasted 10 sec less than normal DC, and was 9 cmH20 weaker than in no DUA DC. Ratio DC duration/voiding time, Pdet/Qmax, Qmax were the parameters most related to DUA and we found tresholds with high AUC and good sensibility and specificty. Interestingly, the majority of women with normal DC showed none or at least 1 of these parameters under reported cut-off (91%), while only 9% had concomitancy of 2 or 3 markers below thresholds. In DUA-G 66% of the women had 2 or 3 concurrent parameters with lower thresholds. Therefore, the coexisting occurrence of 2 or 3 of these parameters with lower cut-off could be a warning for detrusor impairment.

PARAMETER	GROUPS	AVERAGE	P-VALUE	YOUDEN CUT-OFF	AUC	SENSIBILITY	SPECIFICITY
Time of detrusor contraction (sec)	CG DUA-G	78,3 68,16	0,022	< 45	0,59	27,9	90,2
Voiding time (sec)	CG DUA-G	41,88 54,24	<0,001	> 45	0,682	62,5	73,5
Age (year)	CG DUA-G	56,76 60,85	0,048	> 70	0,599	34,6	85,3
Pdet Max (cmH20)	CG DUA-G	29,41 20,15	<0,001	< 18	0,693	57,7	73,5
Pdet Qmax (cmH20)	CG DUA-G	23,22 14,98	<0,001	< 14	0,72	60,6	75,2
Q max (ml/sec)	CG DUA-G	18,47 12,15	<0,001	< 14	0,75	74	71,3
Post Void Residual Volume (ml)	CG DUA-G	41,86 86,97	0,002	> 30	0,615	48,1	75,5
Post Void Residual Volume Ratio (%)	CG DUA-G	8,94 18,53	0,001	> 0,1091	0,619	47,1	80,4
Time of detrusor contraction/Voiding time (sec/sec)	CG DUA-G	2,39 1,32	0,005	< 1,375	0,772	58,7	83,3
Voiding time/Time of detrusor contraction (sec/sec)	CG DUA-G	0,57 0,91	<0,001	0,7143	0,772	58,7	83,3
Tdet/Voided Volume (sec/ml)	CG DUA-G	0,287 0,262	0,524	< 0,1711	0,558	45,2	68,6
Voiding Time/Voided Volume (sec/ml)	CG DUA-G	0,145 0,207	0,023	>0,0891	0,647	88,5	41,2
Voided Volume (ml)	CG DUA-G	366,27 354,83	0,602	< 345	0,521	47,1	61,8

Table 1. Main detrusor contraction characteristics.

Conclusions

Our study defined how the duration and strength of the DUA DC were reduced compared to normal DC also reporting parameters that could be *red flags* for detrusor impairment.