

Is there any significance of the appearance of the urethral pressure profile trace in women voiding dysfunction?

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Introduction

Women with functional voiding dysfunction often experience a “catching” sensation when catheterising and are in general investigated with both urethral pressure profilometry (UPP) and urethral sphincter electromyography (EMG).

It is unknown whether the pattern of the UPP trace correlates with this sensation of “catching” or with sphincter EMG findings.

Methods

Retrospective review of all women with voiding dysfunction who had undergone sphincter EMG and UPP.

UPP traces were classified as smooth or pulsatile by an independent clinical scientist and the EMG was classified as normal or abnormal by an independent uro-neurology physician.

Patients were contacted for telephone interview to assess their level of difficulty with performing self-catheterisation (CISC).

Statistical analysis was by Chi squared test for pulsatile UPP trace as a predictor of abnormal EMG. The sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV) of a pulsatile UPP trace for predicting abnormal EMG were also determined.

Results

A total of 107 women of mean age 35.8 years underwent both sphincter EMG and UPP between 2011 and 2015.

There was a highly significant association between the presence of a pulsatile UPP and the finding of an abnormal EMG ($p < 0.0001$).

The PPV of pulsatile UPP for abnormal EMG was 0.83 and the NPV of pulsatile UPP for abnormal EMG was 0.74.

61/107 (57%) of the women also completed the telephone interview assessing discomfort on catheterisation, particularly on catheter removal (“catching”). Difficulty with catheterisation was assessed in a binary manner as present or absent and correlated to the appearance of the UPP trace and EMG.

Mean MUCP was determined for both the patients with smooth and pulsatile UPP and was found to be unrelated to the pattern of the UPP and was not significantly different between the two groups.

There was no significant association between type of EMG abnormality and pattern of UPP.

	Smooth UPP Trace	Pulsatile UPP Trace		Smooth UPP Trace	Pulsatile UPP Trace
N (%)	33 (54)	28 (46)	Mean age (years)	38.2 (18-72)	32.9 (14 -54)
CISC or IDC dependent	22	18	N (%)	57 (56)	50 (44)
Absent	8 (37)	5 (28)*	Abnormal EMG findings N (%)	7 (12)	32 (64)*
Present (catching)	14 (63)	13 (72)*	DB alone N (%)	0	0
			CRD + DB N (%)	7 (100)	32 (100)
			Normal EMG N (%)	50 (88)	18 (36)*
			CRD alone	23 (46)	9 (50)
			No CRD or DB	27 (54)	9 (50)
			Mean MUCP (range) cm H ₂ O	86 (43-138)	94 (40-131)

Conclusion

A pulsatile UPP trace is highly sensitive for abnormal EMG in patients with voiding dysfunction. There was no significant association between “catching” on catheterisation and pattern of UPP.

The findings of this study identify the potential to significantly reduce the use of concentric needle electromyography and replace it with urethral pressure profilometry in isolation when investigating women who present with voiding dysfunction.