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SENSORY EVALUATION AS A DIAGNOSTIC TOOL IN WOMEN WITH AN UNDERACTIVE DETRUSOR AND POST VOID RESIDUAL TREATED WITH BETHANECHOL.

Aims of Study

Women with an underactive detrusor who void with post void residual (PVR) are often treated in first line with bethanechol. Other more invasive treatments to improve bladder emptying are intravesical electrical stimulation and sacral neuromodulation. These treatments exert their effects by acting through modulating the afferent nervous system, which suggests a close interaction between the afferent and efferent pathways. Success towards these treatments is often variable, which might be due to an inadequate patient selection, because diagnosis is solely made by focusing on the voiding phase. In this study we evaluated whether sensory evaluation in the lower urinary tract permits to identify patients likely to respond to bethanechol. If so, such a pretreatment sensory evaluation might then reduce treatment failure.

Methods

Eighteen women with PVR above 150 mL on at least 2 spontaneous voidings were studied. Inclusion criteria were a urodynamically proven underactive detrusor and reduced bladder sensation. Excluded were signs of outlet obstruction or detrusor overactivity during filling. They were hospitalised for 10 days and treated 4 times daily with 5 mg SC bethanechol. A positive response was defined as PVR < 20 ml for > 90% of the spontaneous voidings. Before and after treatment, a sensory evaluation was performed by means of studying the sensations of filling during cystometry and by determining electrical perception thresholds (EPT) in the bladder. PVR was measured by catheterization.

Results

The data of the sensory evaluations are shown in the table.

	Responders		Non responders	
	Before therapy	After therapy	Before therapy	After therapy
First sensation of filling:V	337 ± 108	179 ± 58	317 ± 65	228 ± 86
P	2 ± 1	2 ± 1	3 ± 4	4 ± 6
Normal desire to void:V	585 ± 67	310 ± 89	511 ± 69	384 ± 105
P	4 ± 2	3 ± 2	5 ± 4	5 ± 5
Strong desire to void:V	742 ± 95	414 ± 100	685 ± 59	513 ± 126
P	5 ± 2	6 ± 5	10 ± 12	8 ± 6
EPT (mA)	8.6 ± 3.0	5.5 ± 1.3	19.8 ± 7.4	20.6 ± 7.7

V = volume (ml); P = pressure (cmH2O)

After therapy 61% (11/18) of the women included voided without PVR. These women with a positive response could not be identified pretreatment based on their sensations of bladder filling during cystometry ($p > 0.1$). However the EPT at baseline was significantly lower than in non responders ($p = 0.004$). In all women sensations of bladder filling were reported at smaller volumes after therapy ($p < 0.0004$), but the decrease in volume was greater in the responders ($p = 0.002$). Detrusor pressures at the different sensations of filling were not different ($p > 0.2$). Furthermore bladder compliance was reduced in all ($p = 0.002$) with no difference between responders and non responders. After therapy the EPT was significantly lower compared with pretreatment values in the responders ($p = 0.004$), no change was seen in the others ($p = 0.14$).

Conclusions

Women with impaired bladder emptying who are likely to benefit from a treatment with bethanechol, can be identified pretreatment through sensory evaluation based on measuring the bladder EPT. In these women betanechol can restore normal bladder sensation and bladder emptying. The evaluation of sensations of bladder filling does not permit to discriminate between responders and non responders. This study suggest that sensory bladder evaluation by measuring electrical sensitivity can be a valuable tool in diagnosis and management of women with impaired contractility. Our preliminary data EPT suggest that a cutoff threshold around 12 mA discriminates best between responders and non-responders, but more patient data are still needed to accurately determine the cutoff threshold with the highest sensitivity, specificity and predictive value.