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TREATMENT WITH INTRAVESICAL ELECTRICAL STIMULATION OF ADULTS WITH UNDERACTIVE DETRUSOR MUSCLE.

Hypothesis / aims of study
Can intravesical electrical stimulation with more physiological parameters retrieve a normal bladder function in adults with underactive detrusor muscle?

Study design, materials and methods
After the local ethical committee approval and twelve persons with underactive detrusor muscle function of neurogenic pathology were invited to participate in this study. They all signed an informed consent. The aim of this study was to test conclusions of an intravesical electrical stimulation (IVES) study presented in 2006.The conclusions were too few stimulations in treatments and finding better ways to patientselection, here representing low impedance score in treated persons. (1)
The persons in present study were all referred by urologists and underwent cystoscopy. All persons were tested for impedance and 2 out of 3 treatments should preferably show impedance under 0,8 k ohm. Self treatment was performed in 6 to 8 weeks with 20 minutes IVES twice a day. A follow up session was held every two weeks in clinic. The effects were evaluated before and after by urodynamics and frequency/ volume charts for two days, a questionnaire of bladder emptying and health questionnaire SF-36.

Results
Two patients were excluded due to high impedance after the initial treatments. Included persons had symptoms of underactive bladder with duration of 11months to 25years and four of them had symptoms of less than 7years duration. The two persons who obtained normal bladder function remained so at 6 months follow up. One of them used CIC (clean intermittent catheterisation) in the evening during menstruation period with residuals of 40 to 170ml. Two persons could after treatment empty around half of their bladder at volumes 422-558ml without straining, but had residuals of 250-260 ml and used daily CIC. This remained after 6 months. Six people still used CIC for bladder emptying and one could empty 2/3 of his bladders by straining like earlier. Impedance score in 9/10 persons was under set level of 0,8 k ohm before treatment. One person had higher score but fairly good detrusorcontraction at urodynamicstest and was included. She improved her bladder function to almost normal.

Previous study of 11 persons performing IVES self-treatment during 2 to 4 weeks resulted in one person cured and 2 persons being able to empty half their bladdervolume. Several of participants (7/11) had a high impedance score >1 k ohm at treatment.
First sensation was felt by all before and after treatment in present study and 8/11before/ 10/11 after in previous study.
Health questionnaire SF 36 (index 50/50) showed a slight health improvement in the present group (physically(PCS) 45/45,5 mentally(MCS) 46,2/48,1) before /after 6-9 months. Both groups together scored PCS 43,3/43,2 and MCS 46,6/ 49,1 before and 6-9 months after treatment.

Interpretation of results
A statistical analysis of the effects of 20 or 40 stimulations to 56-136 (average 98) stimulations showed that a high number of treatments are not giving proportionally better results in a small group.(P=0,19) With small effect it was incentive to evaluate the few persons in the study due to the considerable time needed for all involved. Earlier reports it has suggested that an early start of IVES treatment after injury has a beneficial effect on the outcome. Better results have also been reported when treating a person with hypocontractile detrusorfunction compared to an acontractile function. (2, 3)
Impedance score did not prove to be inclusion criteria in the present small group of adults. The size of the group could be a factor but also lowering the score might give more promising results.(1)
A health questionnaire in a small material like ours can only show tendencies, as CIC had no influence on the level of health and was met by a greater acceptance 7/21 after IVES-treatment
The subjects in our study were not examined by neuro-physiologically investigations e.g. by evoked potential test of the vesicourethral junction. Maybe this could be useful for a better selection of patients and prediction of outcome. The material for such tests has proven hard to come by.

Concluding message
Intravesical electrical stimulation can normalise micturition function in persons with underactive detrusor. In our study just two of ten persons in present study benefited fully from the treatment. A shorter period from injury to treatment and young age may give a higher response rate. Improvements in selection of patients to better predict the outcome of IVES-treatment is desired.

References

1. Modulation of micturition reflex pathway by intravesikal stimulation induces a prolonged decrease in micturition threshold volume in the rat. Neurourol urodyn 1998;17:543-53.

2. Persistent postopertive urinary retention treated with transurethral intravesical electrostimulation.Acta Obstet Gynecol Scand 1995;74:842-845

3. Restoration of micturition in patients with acontractile and hypocontractile detrusor by transurethral electrical bladder stimulation. Neurourol Urodyn 1996;15:489-497.

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1. Modulation of micturition reflex pathway by intravesikal stimulation induces a prolonged decrease in micturition threshold volume in the rat. Neurourol urodyn 1998;17:543-53
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Specify source of funding or grant	**None**
Is this a clinical trial?	**Yes**
Is this study registered in a public clinical trials registry?	**No**
What were the subjects in the study?	**HUMAN**
Was this study approved by an ethics committee?	**Yes**
Specify Name of Ethics Committee	**Forskningsetikkommittén vid Karolinksa institutet, regionala.(Translated; Regional research-eticskommitte of the Karolinska institute)**
Was the Declaration of Helsinki followed?	**Yes**
Was informed consent obtained from the patients?	**Yes**