Aims of study: Functional pelvic floor electrical stimulation (FES) has been utilized as a treatment for urinary incontinence due to overactive bladder. Functional magnetic stimulation (FMS) has been applied by clinical neurophysiologists as a safe and noninvasive method for stimulation of nervous tissues(1). Recently, a continuous magnetic stimulator assuring long-time stimulation has been developed, and the effects on urethral closure and inhibition of detrusor contraction have been reported(2,3). The aims of our study was to perform a randomized study for investigating the urodynamic effects of FMS and FES on inhibition of detrusor overactivity.
Methods: Thirty-two patients with urinary incontinence due to detrusor instability (15 males, 17 females; aged 62.3 ± 16.6 years) were randomly assigned to two treatment groups (15 patients in the FMS group and 17 in the FES group). Stimulation was applied continuously at 10 Hz in both groups. For FMS the magnetic stimulator unit was set on an arm-chair type seat and had a built-in coil-cooling system and a concave-shaped coil, so that the patients could sit undressed during stimulation. For FES, a vaginal electrode was used in females and an surface electrode to the foreskin of the penis in males. Cystometry was performed before and during the stimulation.
Results: The two treatment groups were well matched with each other in terms of number of patients, age, sex, body weight and pre-treatment urodynamic parameters. Bladder capacity at first desire to void and and maximum cystometric capacity increased significantly during stimulation compared with prestimulation levels in both groups (p= 0.0054 and 0.0015, respectively, in the FMS group, and p= 0.0045 and 0.0229, respectively, in the FES group). However, the increase in maximum cystometric capacity was significantly (p=0.0135) greater in the FMS group (114.2±124.1 cmH2O, or 105.5±130.4% increase compared with pretreatment level) than that in the FES group (32.3±56.6 cmH2O, or 16.3±33.9% increase). Detrusor overactivity was abolished in 3 patients of the FMS group, but not in any patient of the FES group. No adverse effects were noted in any of the patients of both groups during the stimulation.
Conclusions: Although both treatments were effective, inhibition of detrusor overactivity appeared greater in the FMS group than in the FES group.
References:
1.Neurosurgery 20: 100-109, 1987.
2.Urology 53: 1108-1111,1999.
3.Urology 54:652-655,1999.

95

Author(s):
AL DALMOSE, NJM RIJKHOFF, TM JORGENSEN, JC DJURHUUS
Institution, city, country:
INST. OF EXPERIMENTAL CLINICAL RESEARCH, AARHUS UNIVERSITY HOSPITAL, DENMARK
Title (type in CAPITAL LETTERS, leave one blank line before the text):

EVENT DRIVEN ELECTRICAL STIMULATION OF THE DORSAL PENILE/CLITORAL NERVE REDUCES BLADDER CONTRACTION PRESSURE AND INCREASES BLADDER COMPLIANCE IN SCI PATIENTS

Background

The hyperreflexive and low compliant detrusor muscle in spinalised

patients often leads to incontinence. Treatment modalities are CIC, anti-muscarinic drugs, pads/diapers and in severe cases bladder-augmentation or implantation of a Brindley-prostheses.

Aim

The aim of our project is to develop a system, which allows treatment of the incontinence by a closed loop electrical stimulation system. The system will detect the onset of a detrusor contraction and in response abort the contraction by activating an inhibiting reflex.
In this study we investigated the effects of event driven short duration electrical stimulation of the dorsal penile/clitoral nerve on bladder compliance in spinal cord injured patients.

Material and methods

Approval for this study was obtained from the local ethical committee. 5 patients with SCI volunteered to participate, 3 male and 2 female, age 22-61 years, 4 complete lesions and 1 incomplete. Each subject underwent two up to four cystomotries. The first cystomotry was normal routine cystomotry, which acted as a control. All subjects showed hyperreflexia during the routine cystometry. During the second cystometry the dorsal penile nerve was stimulated in response to a sudden increase in bladder pressure. Stimulation was performed using a custom build stimulator, which was connected to a handheld bipolar electrode (Dantec-Medtronic) placed on the skin over the dorsal penile/clitoral nerve. Stimulation parameters used: pulseduration: 100 µs; pulse rate: 20 pulses/s; amplitude: 12-34 mA. Stimulation was stopped when the bladder pressure decreased. Duration of the stimulation was usually 10-25 s. Several stimulations were performed during one single cystometry if considered relevant. The event driven stimulations during cystometry continued until leakage, patient discomfort, or a cystometric capacity more than 500 ml.

Results

Pressure at first contraction was reduced by -38% (range -9 to -64%) (fig 1). Compliance was increased by 43% (range +142 to -65%) (fig 2).

Fig 1

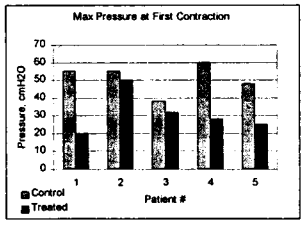
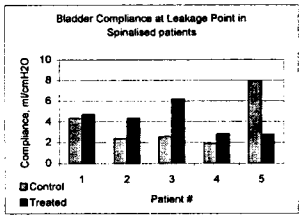


Fig 2



Conclusion

This study shows that event driven short duration electrical stimulation of the dorsal penile/clitoral nerve reduces peak bladder pressure and

increases bladder compliance in spinal cord injured patients. This treatment modality linked to chronic and automatic monitoring of bladder activity, may become an alternative to augmentation procedures and the Brindley prosthesis.

96

CM Bryant[1], CJ Dowell[2], G Fairbrother[3]

Royal South Sydney Community Health Complex[1], Peakhurst Community Health Centre[2], Prince of Wales Hospital[3]. Sydney Australia

A RANDOMISED TRIAL OF THE EFFECTS OF CAFFEINE UPON FREQUENCY, URGENCY AND URGE INCONTINENCE

Aim of the Study: Recommending caffeine reduction is an internationally accepted practice among continence practitioners who treat the symptoms of urinary urgency, frequency and urge incontinence. Despite an apparent consensus that caffeine does impact on urinary symptomatology, little is known about the size/nature of its effect, and whether usage pattern/history and demographics are significant factors mediating any effect. Previous workers have demonstrated a detrusor pressure rise on bladder filling among a small sample of symptomatic women who received a 200mg oral caffeine bolus prior to urodynamics[(1)]. Others have investigated urinary symptomatology in healthy younger men and found that caffeine consumption was assocated with urinary symptoms in 2-13% of subjects. Despite a lack of evidence regarding the effects of caffeine upon urinary frequency/urgency, some published commentaries identify caffeine as an inducer of bladder hyperactivity[(5)] and recommend that caffeine decrease should reduce urinary symptoms[(2,3,4,)]. Therefore, we aimed to investigate the effect of caffeine reduction upon urinary frequency, urgency and urge incontinence.

Method: a prospective randomised trial was conducted among consecutive adult patients with symptoms of urinary, frequency and/or urge incontinence referred to two nurse continence advisers at community health continence clinics. Patients who routinely ingested 100mg or more of caffeine per day were invited to join the trial. Patients with significant cognitive impairment or symptoms of urinary tract infection were excluded. Ethics Committee approval was granted for the study and patients received no remuneration for their participation. Patients were allocated to an intervention or control group. The intervention group received bladder training and advice to reduce their caffeine intake to <100 mgs per day. The control group received bladder training and a request to continue their normal caffeine intake during the one month study period. All subjects completed a caffeine usage history and a three day time/volume chart at trial entry. Subjects were enrolled in the trial for 30 days and during that period completed time/volume charts (including leakage and caffeine intake) for three days of each of the four trial weeks. The target sample population is 90 subjects and the results displayed below reflect findings in relation to the first 36 patients.

Results: 10 of the 36 consented subjects (28%) were lost to follow up. The results displayed below summarise findings for the remaining 26 participants. The mean age of the sample was 59 year (range 31-79) and 88% were female. A comparison of key baseline measures is set out in Table 1:

Table 1: Baseline measures

	Intervention Group	Control Group
Daily caffeine intake mg (mean)	193	315
Frequency (voids/day) (mean)	10	10
Urgency (occasions/day) (mean)	4	5
Leakage (occasions/day) (mean)	4	4

Differences between the two groups regarding baseline caffeine intake were marked. However, this value displays high variability and numbers of subjects are still relatively low. Outcomes after 30 days were measured by calculating change in voids/day, occasions of urgency/day and occasions of leakage/day. Comparative results are set out in table 2.