Effects of penile vibratory stimulation in spinal cord lesioned men

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This PhD dissertation is based on two original articles. The project was carried out at the Urological Department, H:S Rigshospitalet, Copenhagen, Denmark from 1999 to 2003.

The aim of this study was to investigate the effects of penile vibratory stimulation (PVS) on the spasticity in the lower extremities and the bladder capacity in spinal cord lesioned (SCL) men. PVS has been known for about 20 years and used for the last 10 years at H:S Rigshospitalet to obtain ejaculation in SCL men with the purpose of fertilization. Throughout this period there have been occasional reports of reduced spasticity and spasms in the lower extremities, and clinical observations of an increased bladder capacity, but this has never been investigated systematically. Both spasticity/spasms as well as reduced bladder capacity with consequently urinary incontinence are limiting factors in the daily life of SCL persons. The usual medical treatment of these problems is often ineffective and has several serious side effects.

In the spasticity study, 9 SCL men were included with lesions ranging from C2 to T8. Electromyographic (EMG) recordings using surface electrodes on the quadriceps and tibialis muscles of the legs, were carried out before and after PVS or “no treatment” with an ambulatory EMG recorder. The number of spasms per hour was calculated, and the spasticity was evaluated by the Modified Ashworth Scale (MAS).

A statistically significant reduction in the number of spasms/hour was found by EMG in the first 3 hours after PVS. A significant reduction in the spasticity was found by MAS immediately after PVS.

In the bladder study, 14 SCL men were included with lesions ranging from C4 to T7 and documented neurogenic detrusor overactivity. Cystometry was carried out before and immediately after ejaculation induced by PVS. After one month with ejaculation every third day at home by PVS performed by the SCL person himself, another cystometry was done to investigate the long-term effect of the treatment.

In all persons, neurogenic detrusor overactivity and detrusor sphincter dyssynergia were found at the baseline investigation. After 4 weeks of ejaculation by PVS every third day, a statistically significant increment of the bladder capacity was found from a median of 190 mL at baseline to 293 mL (p=0.03, Wilcoxon signed rank sum test). Furthermore, a trend towards a reduction in the detrusor pressure in the filling phase was found.

We conclude that PVS may have implications in the management of spasticity/spasms and decreased bladder capacity in some SCL men. Since, it is not possible to predict in each individual case who will benefit from using PVS, it can easily be tried because the treatment seems rather harmless and without adverse effects. Also, PVS has the advantage of being easily applied by the SCL person himself at home.