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Author(s) Brigitte Schurch, Daniel M. Schmid, Armin Curt and Dieter Hauri

Institution city country Swiss Paraplegic Centre, University Hospital Balgrist Zurich and Department of Urology, University Hospital Zurich, Zurich, Switzerland.

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VISCEROSENSORY EVOKED POTENTIALS (VSEP) DURING CYSTOMANOMETROGRAPHY (CMG): A NEW DIAGNOSTIC TOOL TO ASSESS INNERVATION OF POSTERIOR URETHRA/BLADDER BASE IN SPINAL CORD INJURED (SCI) PATIENTS.

INTRODUCTION & OBJECTIVES:
In SCI patients clinical examination does not consider viscerosensibility of bladder and urethra and filling sensation during CMG is not a reliable objective finding Assessment of neurogenic voiding disorders needs more accurate information about afferent sensory pathway from bladder/urethra to brain centres in order to provide more specific bladder rehabilitation methods This prospective study aims at evaluating sensory nervous pathways from the posterior urethra after SCI by means of combined simultaneous CMG and VSEP recordings with a special microtip catheter

MATERIAL & METHODS: 52 SCI patients (25 sensory incomplete, 22 complete para/tetraplegic and 5 multiple sclerosis) and 9 control subjects entered the study All were neurological examined according to the ASIA protocol and underwent full video-urodynamic examination Simultaneously to CMG measurement, the bladder filled with 200 ml contrast medium, VSEP responses over the scalp (Cz/Fz, internat. 10/20 system) were recorded during electrical stimulation of the posterior urethra by a microtip transducer catheter with bipolar electrodes plugged in an electromyograph (averaging of 500 rectangular pulses, 0 2 ms width, 3 Hz, 2-3 fold sensory threshold). Sensory threshold data and VSEP latency were analysed relative to clinical findings in different patient groups

RESULTS:
In all 9 subjects without neurogenic bladder dysfunction VSEP responses of the posterior urethra could be recorded with a mean P1 latency of 61 ms (+/- 11 ms SD, range 50-76 ms) This response occurred always later than Pudendus SEP (39 ms) Sensory threshold was mean 7 7 mA (+/- 3 mA SD, range 5- 15 mA). The reported feeling was comparable to strong desire to void In 22 patients with complete sensory loss no responses could be recorded and no sensory threshold could be determined. In 25 SCI patients with rest sensibility below the lesion level and disturbed bladder filling sensation sensory threshold was pathological high with mean 24 mA (range 13-80 mA); SEP latency was mean 67 ms (range 58-80 ms). In 5 multiple sclerosis patients, sensory threshold was rather low with mean 10 mA (range 5-20 mA), they all suffered from urgency. VSEP latency was mean 69 5 ms (range 60 3-77 6 ms) There was no significant correlation between VSEP latency and severity of sensory disturbances in incomplete SCI due to wide range of latencies even in control subjects Sensory thresholds correlated well with patients self reports of their urethral sensibility.

CONCLUSIONS:
Simultaneous recording of CMG and VSEP of the posterior urethra using a specially adapted microtip catheter is a reliable diagnostic tool to clarify and confirm the often vague bladder/urethral sensibility of SCI patients and to get additional information about viscerosensibility of the lower urinary tract.