Author(s) Karl-Dietrich Sievert[1,2], Curtis A Gleason[1], Klaus-Peter Jünemann[3] and Emil A Tanagho[1]

Institution, city, country
[1] University of California, San Francisco, School of Medicine Department of Urology
[2] Westfälische Wilhelms-Universitat Münster Klinik und Poliklinik für Urologie
[3] Ruprecht-Karls Universität Heidelberg, Klinikum Manneim, Klinik und Poliklinik für Urologie

Title (type in CAPITAL LETTERS, leave one blank line before the text)

PHYSIOLOGICAL BLADDER EVACUATION BY SELECTIVE SACRAL ROOT STIMULATION USING THE SINUSOIDAL SIGNAL AND SPECIFIC ORGAN FREQUENCY

Aims of Study Patients with supraconal spinal cord injury suffer the loss of bladder control resulting in detrusor hyperflexia and sphincter spasm. Sacral anterior root stimulation (SARS) evacuates the bladder but the sacral deafferentiation (SDAF) is needed to eliminate the bladder hyperreflexia to have normalized bladder filling. The common stimulation parameters coactivate the detrusor and the external urethral sphincter simultaneously, known as detrusor-sphincter-dyssynergia. The resulting post-stimulus-voiding is not physiological. We investigated for endorgan specific (detrusor or sphincter) stimulation parameters.

Methods The common rectangular pulse and the sinusoidal signal with a variety of parameters were investigated in 20 acute male dogs, at least one year old, while stimulating the spinal S_1 - S_3 anterior roots extradurally or intradurally. The other parameters were: Stimulation frequency, stimulation voltage, uni- vs. bilateral stimulation and bladder filling. New torpedo shaped bipolar electrodes were used; adjusted to the nerve diameter (extra- or intradural placement).

Results The best results were recorded by using intradural bilateral sinusoidal signal. Sphincter was fatigued by prestimulating S_2 with 104±71 Hz and 0.8±0.3 V for 10 - 15 sec. Afterwards, additional S_3 stimulation with 16±12 Hz and 0.4±0.3 V caused detrusor pressure of 28.7±3.0 cm H_2O above the sphincter pressure without new sphincter pressure increase.

Conclusions Sacral anterior root stimulation with end organ specific parameters, can be used to fatigue the sphincter. Induced sphincter fatiguing resembles to the physiological sphincter relaxation. This decreases the micturation baldder outlet resistants from the start of the induced micturation on. Organ specific parameters SARS (OSP-SARS) might prevent further detrusor hyperplasia.

Type your text within this frame. If 2nd page is needed use Abstract Form A-2.