 https://doi.org/10.21751/FRM-39-3-4-7

EMG OF ANAL AND URETHRAL SPHINCTER

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Electromioneurography is a diagnostic neurophysiological method used to assess the functional state of the examined muscles, as well as their innervating nerves (1). Electromyoneurography of the sphincter is a diagnostic neurophysiological method that assesses the functional state of the sphincter muscles (most often the external anal and/or urethral sphincter) as well as their innervating nerves, especially the pudendal nerve (2). Clinical indications for EMNG of the sphincter are fecal and/or urinary incontinence, chronic constipation, erectile dysfunction, chronic pelvic pain. The causes of the above-mentioned dysfunctions can be suprapontine damage, cerebrovascular diseases, Parkinson's disease, multiple sclerosis, suprasacral spinal lesions, spina bifida, sacral lesions, multiple system atrophy, injury to the peripheral nervous system - pudendal nerve, postpartum sphincter dysfunction (3).

Electromyographic examination begins with a targeted clinical examination (history and status) to find out when and under what circumstances the disturbances occur, intensify, and what calms them down. To find out whether body position during the day - night, diet (diet - intake of soluble and insoluble fibers - intake of fluids), taking medications (anticholinergics) affect the regulation of stool, urination, pain. Are there symptoms of autonomic dysreflexia, spastic abdominal muscles, increased body temperature, change in body weight, trauma to the brain, spinal cord, pelvis and peripheral nerves of the pelvis, surgical interventions of the head, spine, pelvis, time elapsed since birth associated with dysfunction of urination, stool, erection, pelvic pain. In addition to the history, clinical status is also important to evaluate sensory and motor impairments – assessment of the abdominal wall through percussion and palpation. Clinical assessment of touch, pain, temperature of the skin and muscles of the pelvic floor and genitals is mandatory.

Check anocutaneous reflexes of the perianal skin and muscles as well as the bulbocavernosus reflex, which will facilitate planning and understanding of EMG-g findings is mandatory (3). Clinically, the bulbocavernous reflex is caused by stimulation (squeezing) of the dorsal nerve of the penis or clitoris, and the expected response is contraction of the external and internal anal sphincter. In the EMG analysis of the bulbocavernous reflex, the latency is measured, which is on average from 26.8 to 39.4ms, and the mean value of the amplitude is from 4.2 to 43.4 microvolts, measured from the peak to the peak of the potential (4). We perform electromyography of the external anal sphincters bilaterally, by inserting a coaxial needle electrode at the anocutaneous border at 3 and 9 o'clock at a depth of 0.5 to 2.5 cm and analyze the electromyographic pattern in relaxation, and when it is possible to register basal sphincter activity or spontaneous sphincter activity (fibrillation, positive sharp waves). Voluntary activity can be an interfering / intermediate pattern or a pattern of individual neuromotor potentials. It is possible to analyze motor unit action potentials (MUAP) which, if pathological, correlate with

nerve damage or dysfunction. Latency longer than 10 ms is pathological, and longer than 16 ms correlates 100% with multiple systemic atrophy as a cause of stool and urinary incontinence, but is poorly sensitive (in 55% of patients with multiple system atrophy - MSA) (5, 6). EMG of the external urethral sphincter is a neurophysiological method for assessing electrical activity in the external striated urinary sphincter, and thus possible damage to the pudendal nerve, as a cause of urinary incontinence. A coaxial needle electrode is usually used for the examination, the examination is performed bilaterally, and can be quite painful for the patient (7). Electromyoneurography of the urethral and anal sphincters is a useful neurophysiological method in assessing damage to the pudendal nerve as the evaluated pelvic floor muscles.

Keywords: EMG, sphincter, bulbocavernosus refleks.

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