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Alloussi S H[1], Lang C[1], Eichel R[1], Alloussi S[1]
1. University of Saarland

NEW NEUROPHYSIOLOGICAL ASPECTS AFTER PASSAGERIC SACRAL NERVE BLOCK OF S3 SEGMENT.

Hypothesis / aims of study

The passageric uni- and bilateral sacral nerve block marks a temporary anasthaesia of the S3 nerval root.
This minimal invasive intervention has value as diagnostical as well as therapeutical procedure and conduces predominantly to differentiate an painful bladder syndrome and a neurogenic and non neurogenic overactive bladder respectively.
Beside of that the passageric sacral nerve block has a therapeutic effect on several non-neurogenic overactive bladder.

Study design, materials and methods

The uni- and bilateral puncture of the foramina sacralia S3 take place under x-ray examination in prone position.
To secure the location of the spinal canula, the nerval roots are displayed with 1 ml of contrast agent.
In correct position, the nerval root got infiltrated with 5 ml 1% xylocain.
The effect of the the passageric sacral nerve block can be observed immediately after injection on the dynamics of the urinary bladder with help of the video urodynamical examination.
From 1980 till 2006, the passageric bilateral sacral nerve block was performed in 1237 patients with drug refractorical overactivity symptoms, as diagnostical examination as well as therapeutical procedure.
Before the procedure, all the patients had an full urological examination (anamnesis with micturition diary, sonography, cystoscopy) and additionally got a video urodynamical examination before and immediately after the block.
Unilateral block was performed in 50 patients to examine the effect of it.
In 20 patients (10 patients with unilateral block, 10 patients with bilateral block) sensitivity of the mucosa was examined cystoscopically.

Results

Unilateral blockade of S3 led to paralysis of the ipsilateral half of the detrusor muscle, even the mucosa sensitivity was erased, except of the trigonal part, which still showed restricted sensitivity at all patients.
Urodynamically it could be shown an ipsilateral acontractility, despite micturition could be triggered voluntarily with half detrusor contraction. In case of male there was residual urine, in case of female there was no residual urine.
Bilateral blockade of S3 led to complete paralysis of the detrusor muscle and of the sensitivity of the mucosa, except the trigonal area, which still showed restricted sensitivity at all patients.
Urodynamically it could be shown a total acontractility of the detrusor with consecutive increasing of the capacity at all patients except in cases of painful bladder syndrome.
In these patients the bladder capacity didn't increase significantly.
During the duration of the anaesthesia, the micturition could be triggered neither voluntarily nor involuntarily at all patients.
In 917 patients with urgency and incontinence (non neurogenic overactive bladder) after fading away of the anaesthesia effect, there was a normalization of the micturition in 752 patients (82%).
47 patients with painful bladder syndrome (histologically diagnosed) there was no changing of the symptoms after fading away of the anaesthesia.
188 patients with neurogenic overactive bladder (incomplete supranuclear lesion), there was an significant increase of the bladder capacity (235ml before to 630ml during the block).
After fading away of the anaesthesia, the same symptoms appeared again.
In 85 patients with other diagnosis (i.e. pelvic pain syndrom, prostatopathy syndrome, unknown pain in the pelvic area), the block led to a significant decrease of the symptoms in 61 patients (72 %).

Interpretation of results

The point of emergence of the motor detrusor nerve is exclusively the S3 segment of the sacral bone.
The innervation of the human urinary bladder shows relatively strict lateral separation.
By block of the S3 segment, the motor activity of the bladder can be completely eliminated, even the sensivity of the mucosa except the trigonal part.
Additionally it could be figured out video urodynamically that there was no morphological changes in the functional urethra during the block.
The passageric sacral nerve block showed no effect in painful bladder syndrome (no significant increase of the bladder capacity, no change in symptoms).
In non neurogenic overactive bladder (urgency and incontinence) the passageric sacral nerve block showed an significant increase of the capacity during and after the block.
In neurogenic overactive bladder the passageric sacral nerve block showed only significant increase of the bladder capacity during the block.
In patients with unclassified syndromes of pelvic pain, the passageric sacral nerve block seems to be a good alternative treatment option with minimal invasivity.

Concluding message

The motoric and sensitive innervation of the detrusor muscle is located in S3 segment and strictly separated. An exception is the trigonal sensitivity.

The passageric sacral nerve block is a minimal invasive and a easy to do method to distinguish between painful bladder syndrome and neurogenic and non neurogenic overactive bladder respectively.

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