

THE EFFICIENCY OF BOTULINUM TOXIN-A INTRADETRUSOR INJECTIONS IN THE TREATMENT OF CHILDREN WITH MALFORMATIONS OF SPINAL CORD AND NEUROGENIC BLADDER DYSFUNCTION (PRELIMINARY RESULTS)

Hypothesis / aims of study

Botulinum toxin-A injections in the bladder wall are established for both adults and children with overactive bladder and urgency incontinence. But the efficiency of this treatment for children with malformations of spinal cord is not enough investigated. The aim of the study was to examine the effect of botulinum toxin-A (Lantox®) in the treatment of neurogenic bladder dysfunction and urinary incontinence of children with myelodysplasia.

Study design, materials and methods

During a 10-month period 18 children, 6 boys and 12 girls (4 - 17 years, md10.6), 9 of them with myelomeningocele and 9 with spina bifida occulta was included into the study. All participants had neurogenic bladder dysfunction and there were following criteria for participation: reduced, absent or non-specific bladder sensation, mixed urinary incontinence, reduced maximum and average voided/CIC volume, bladder with phasic or terminal detrusor overactivity or detrusor underactivity with high detrusor pressure during the filling cystometry. 6 patients used clean intermittent catheterisation (CIC) for bladder emptying, 7 had permanent drainages of urinary tracts: Foley catheter for bladder drainage (4), ureterostomy (2), cystostomy (1). Vesicoureteral reflux was diagnosed by cystourethrography in 12 cases.

All were treated with anticholinergics for a long time (3-8 years) before treatment. Botulinum toxin-A (Lantox®) was injected into the bladder wall via cystoscopy under general anesthesia. The amount of Lantox injected 5 U/kg with a maximal dose of 150 U. Evaluation was performed by 48 hour bladder diary, 24 hour pad testing and filling cystometry (maximum detrusor pressure, maximum cystometric capacity) before; at 1, 3 and 6 months after treatment.

Results

Significant increase of bladder volume was registered from 7 day of supervision, which allowed saving 5 patients from permanent Foley catheter and cystostomy, and start using CIC. 1 months follow-up there was an average increase of bladder voided/CIC volume 91,4% ($p < 0.01$). 6 children and parents noted disappearance of incontinence episodes, in 6 decrease the degree of incontinence (1-2 incontinence episodes during 24 hour test) and 6 registered the significant decrease in the weight of the pads by 30-60%. Filling cystometry detected disappearance of detrusor overactivity in all cases, average decrease of maximum detrusor pressure from 35,2 cm to 14,2 cm H₂O ($p < 0.05$), Maximum cystometric capacity increase 53,7% ($p < 0.01$). No side effects were noted.

Similar rates remained 3 and 6 months after treatment without medication. After 6 months voiding cystourethrography found out disappearance of vesicoureteral reflux in 4 patients.

Interpretation of results

Botulinum toxin-A injected into the detrusor wall results in disappearance of detrusor overactivity, considerable increase of bladder volume, reduction of detrusor pressure in children with neurogenic bladder dysfunction and myelodysplasia. The incontinence episodes decreased but only 1/3 of patients became completely continent. The reduction of detrusor pressure may lead to disappearance of vesicoureteral reflux.

Concluding message

Botulinum toxin-A injected into the detrusor improves the continence in children with malformations of spinal cord and neurogenic bladder and appears to be a valuable second line treatment option. Further studies are required to determine the effect duration and then reinjection is necessary.

Disclosures

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