

EFFICACY OF INTRAVESICAL ONABOTULINUM TOXIN-A INJECTION ON THE TREATMENT OF VESICoureTERAL REFLUX ASSOCIATED WITH NEUROGENIC DETRUSOR OVERACTIVITY IN CHILDREN WITH MYELOMENINGOCELE

Goal of this study is to assess the effect of intradetrusor onabotulinum toxin-A injection in children with myelomeningocele (MMC) who have vesicoureteral reflux (VUR) due to neurogenic detrusor overactivity (DOA) and failed the first line treatment with clean intermittent catheterization (CIC) and oral anticholinergics.

Study design, materials and methods

Eleven children (4 male, 7 female) with MMC, DOA and VUR were included into this single arm study between the years 2006 and 2012. Intradetrusor onabotulinum toxin-A injections were performed at the dose of 10 U/kg (maximal dose of 300 U) into 30 different bladder sites each in 1 ml SF sparing the trigon. The main indication of injection was persistent DOA despite of anticholinergics and CIC threatening the upper urinary tract and leading to urinary incontinence. Urological evaluation and videourodynamic (VUD) studies were done both before and 4 weeks after onabotulinum toxin-A injection.

Results

Mean age of the patients were 9.7 years (range:7-13 years). Preoperatively, VUR was observed in 14 renal units (RU) of 11 children. Reflux grade was grade III or higher in 8 RU and scar was observed in 9 RU at DMSA scintigraphy. Reflux was disappeared on 5 RU and grades were decreased on 5 of 14 RU (Table I). Grades of VUR were same on 2 RU and upgraded on 2 RU (1 patient). Hydronephrosis disappeared postoperatively on 4 RU and decreased on 5 RU. Antibiotic prophylaxis was continued in all children and no febrile urinary tract infection was seen postoperatively. Onabotulinum toxin-A injection resulted in a 42% improvement in maximum cystometric capacity and maximum detrusor pressure, overall (Table II). Particularly, 1 patient with upgraded bilateral VUR had also no improvement in urodynamic parameters.

Interpretation of results

Table I: Comparison of VUR degrees before and after Onabotulinum toxin-A Injection

	No VUR	Grade 1-2 VUR	Grade 3 or higher VUR
Before Injection	8 (36.3%)	6 (27.4%)	8(36.3%)
After Injection	13(59%)	3(13.6%)	6(27.4%)

Table II: Comparison of urodynamic findings before and after Onabotulinum toxin-A Injection

	Bladder Capacity in ml	Maximum Detrusor Pressure in cmH ₂ O
Before Injection	183 (min:57 – max:385)	50.1 (min:88 – max:600)
After Injection	261 (min: 31- max: 86)	29.3 (min:14 – max:61)
Improvement in percentage	42%	42%

Concluding message

Onabotulinum toxin-A injection leads to a resolution of VUR in 35% of RU and to a downgrade in another 35% of RU in children with DOA. This effect seems to be secondary to an increase in bladder capacity and a decrease in maximum detrusor pressure in our study group. Further studies are needed to assess the efficacy of onabotulinum toxin-A injection in the treatment of DOA-induced VUR.

Disclosures

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