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The effects of intradetrusor BoNT-A injection on vesicoureteric reflux in children with myelodysplasia

European Urology Supplements 2019;18(3):e2473

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Introduction & Objectives: We retrospectively evaluated the efficacy of BoNT-A on vesicoureteric reflux, continence status and urodynamic parameters in children with myelodysplasia who were not responding to standard conservative therapy.

Materials & Methods: The study included 31 children (13 boys, 18 girls) with a mean age of 9,2+ 2.3 years (range 5-14 years) with myelodysplasia, retrospectively. All children were fully CIC-compatible and did not respond to the maximum tolerable anticholinergic dose. All children underwent intradetrusor 10U / kg (max 300U) BoNT-A injection into an infection-free bladder. They all had VUR (22 unilateral, 9 bilateral) preoperatively. The grade of reflux was mild (grade 1,2), intermediate (grade 3) and severe (grade 4,5) in 25, 7 and 8 ureters, respectively.

Results: Maximum bladder capacity increased from 152,9+76,9 (min:45,max:324) to 243,7+103 (min:88, max:600) ml ($p<0.001$), and maximum detrusor pressure decreased from 57+29,4 (min:21,max:140) to 29,6+13,9 (min:11,max:61) cmH_2O ($p<0.001$), respectively. After BoNT-A treatment 16 (40%) refluxing ureters completely resolved, 17 (42,5%) improved, 5 (12,5%) remained unchanged and 2 (5%) worsened. Of the 31 children with urinary leakage between CICs, 22 (71%) became completely dry, 6 (19%) improved and 3 (10%) had a partial improvement.

Table 1. Changes in urodynamic parameters

	Preoperative	**Postoperative**	**P value**
Maximum cystometric capacity (ml)	152,9+76,9 (min:45,max:324)	243,7+103 (min:88,max:600)	<0.001
Maximum detrusor pressure (cm H_2O)	57+29,4 (min:21,max:140)	29,6+13,9 (min:11,max:61)	<0.001
Compliance (ml/cmH2O)	3,77+3,13	11,25+7,32	<0.001

Table 2. VUR status before and after BoNT-A treatment

		Postop VUR grades						Total
		0	1	2	3	4	5	
Preop VUR grades	0	22	0	0	0	0	0	22
	1	10	2	1	0	0	0	13
	2	5	6	1	0	0	0	12
	3	1	2	3	0	1	0	7
	4	0	1	1	2	0	0	4
	5	0	0	0	2	0	2	4
Total		38	11	6	4	1	2	62

Table 3. Changes in hydronephrosis

		Postop hydronephrosis					Total
		0	1	2	3	4	
Preop hydronephrosis	0	34	0	0	0	0	34
	1	9	4	0	0	0	13
	2	1	4	2	2	0	9
	3	0	0	3	1	1	5
	4	0	0	0	1	0	1
Total		44	8	5	4	1	62

Conclusions: In children with myelodysplasia, we were able to increase bladder capacity, enhance continence and prevent VUR by using intradetrusor BoNT-A injection. Although our results are promising, a larger group of long-term prospective studies are warranted to investigate this method of treatment.