

Intravesical Electromotive Botulinum Toxin Type A (Dysport®) Administration in Children with Myelomeningocele

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All authors declare that they have no conflict of interest and funding.

Abstract word count: 307 ???

Video Article

Abstract

Introduction and objective: Electromotive drug administration (EMDA) presents a minimally-invasive method of intravesical instillation of therapeutic agents without the need for general anesthesia ¹. It employs a combination of iontophoresis, electrophoresis, and electroporation to deliver drugs into deep tissue layers using an electrical current created between two electrodes ². This video shows feasibility of botulinum toxin type A (BoNTA) EMDA in myelomeningocele (MMC) children with urinary incontinence secondary to neuropathic detrusor overactivity.

Technique: In this technique (Video 1), catheterization was performed with a 10-Fr (CE-DAS, UROGENICS/ Ag 9900 (pediatric), Mirandola, Italy) catheter electrode, after providing a local transurethral anesthesia with 2% lidocaine gel. The cuff of the catheter was filled by 2cc saline solution. The bladder was then drained and irrigated with 0.9% saline solution until the catheter outflow became clear. The bladder was subsequently filled with sterile water to its maximal capacity. BoNTA (Dysport®) at a dose of 10 IU/kg was added to the intravesical solution. Negative electrode as two dispersive electrodes was placed on the abdomen. Positive electrode was connected to the intravesical catheter. A pulsed current generator (Physionizer 30, Physion srl, Mirandola, Italy), delivered a current with frequency of 2800 Hz, interval of 50 μ s and amplitude of 10 - 20 mA for 20 minutes. At the end of the procedure, the bladder was emptied.

Results: For the first time, BoNTA/EMDA was performed on MMC patients with urinary incontinence in our center 3, (4). According to our prior reports, urinary incontinence

improved in 75% of the patients between two consecutive clean intermittent catheterizations at 1 year follow up (R 5). Mean maximal cystometric capacity significantly increased in the most of the patients 6 months after the treatment 3-5.

Conclusion: This technique is a feasible, safe, reproducible, cost effective, long lasting and pain free method, on an outpatient basis with long-term duration of effects and without anesthesia or cystoscopy procedure.

Key words: Electromotive drug administration; urinary incontinence; children; botulinum toxin

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