Ultrasound Guided Intraglandular Injections of Botulinum Toxin Type A: a New Option for Treatment of Sialorrhoea in Children with Cerebral Palsy

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Abstract

Background: Sialorrhoea (excessive drooling) is an important clinical, social, and emotional issue for people with severe neurological disease such as cerebral palsy in childhood and parkinson's disease or amyotrophic lateral sclerosis (ALS) in adults. In the neurologically impaired child, excessive drooling, or sialorrhoea, can add significantly to the management requirements of an individual whose care already demands an enormous amount of time and effort. Over the last several years, botulinum toxin type A (BTX-A) has gained widespread use for the management of focal spasticity in children with cerebral palsy. The application of BTX-A to treat drooling is still experimental and subject to research. Because of the pharmacological properties of BTX-A, it has been postulated that BTX-A might reduce salivary flow from the salivary glands.

Objectives: To study the safety and efficacy of ultrasound guided botulinum toxin type A injections into the submandibular glands for treatment of sialorrhoea in children with cerebral palsy.

Material and Methods: Twenty children with cerebral palsy and sialorrhoea were included in this study (13 males & 7 females). Salivary flow was measured under standardized conditions. Under ultrasound guidance, one dose of BTX-A (BOTOX®) was injected bilaterally into the submandibular glands with the patients under general anesthesia as an outpatient's procedure or during a short stay at the daytime care unit. All cases were evaluated with salivary flow measurement before injection (baseline) and repeated at one week and 24 weeks after injection.

Result(s): There were a statistical significant difference in severity, frequency of drooling and amount of salivation as regarding the effects of ultrasound guided botulinum toxin type A injection into submandibular glands for the treatment of sialorrhoea. Of the 20 patients treated, seventeen (85%) reported a subjective reduction in salivation one week and 24 weeks after injection. The parents reported a satisfactory reduction of drooling throughout the whole study period. No serious adverse events occurred and no procedure related complications were reported.

Conclusion(s): The application of ultrasound guided botulinum toxin type A to submandibular glands is a promising, safe and effective technique to reduce salivary flow rate and probably an alternative in the treatment of drooling in children with cerebral palsy.

Key Words: Sialorrhoea - Cerebral palsy - Intraglandular injection - Botulinum toxin.

Introduction

SIALORRHOEA, or excessive salivation and drooling is commonly associated with many neurological and systemic conditions and often results from a disturbance in the coordination of swallowing. The condition affects about 10% of patients with chronic neurological disease such as cerebral palsy, Parkinson's disease, amyotrophic lateral sclerosis, and post-traumatic encephalopathy; Primary sialorrhoea is comparatively rare [1].

Persistent sialorrhoea creates major hygienic and psychosocial difficulties for patients and their caregivers; these include maceration of skin around the mouth, chin, and neck, which may result in secondary bacterial infections. In addition, sialorrhoea can interfere with speech and feeding and thus contribute to embarrassing and disabling social problems, which result in a decrease in quality of life [2].

In children with cerebral palsy complaining sialorrhoea, the primary problem appears secondary to oral-motor dysfunction and not secondary to extensive production of saliva. Affected children are unable to swallow saliva fast enough to prevent drooling. Other contributing factors may include a child's emotional state, head position, posture, concentration, malocclusion, tongue size and control, ability to feel the lips, oral cavity sensation, and degree of nasal obstruction [3]. It has been reported to be a significant problem in 10-37.5% of patients with cerebral palsy [4].