Botulinum toxin may offer temporary drooling relief in children with neurological disorders

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Botulinum toxin treatment appears to offer a temporary, short-term solution to relieve drooling in children diagnosed with certain neurological disorders, according to a report in the September issue of *Archives of Otolaryngology - Head & Neck Surgery*.

"Recent estimates suggest a prevalence of [drooling in] nearly 60 percent in children in special care school, of which 33 percent could be classified as severe," the authors write as background in the article. "Depending on the associated neurological disorder, cognitive abilities and oral motor function, affected children may experience anything from stigmatization and social neglect to numerous daily clothing changes, perioral dermatitis [skin irritation around the mouth], aspiration pneumonia or even dehydration."

Arthur R. T. Scheffer, M.D., of Radboud University Medical Center, Nijmegen, the Netherlands, and colleagues studied 131 children diagnosed as having cerebral palsy or other non-progressive neurological disorder, and who also had moderate to severe drooling, to test the efficacy of botulinum toxin when used as a treatment for drooling in children with neurological disorders. For the injection of the toxin, children were under general anesthesia and the injections were limited to the submandibular glands, which are responsible for 70 percent of resting saliva production. The sublingual glands and parotid glands were not treated.

Of the 131 children participating in the study, 77 were boys and 54 girls with an average age of 10.9 (age range was 3 to 27 years). About 90 percent of the patients were diagnosed as having cerebral palsy. The researchers developed a drooling quotient to assess the severity of drooling, and this measurement served as the primary measure for both efficacy and duration of botulinum toxin treatment. At the two-month follow-up, the average drooling quotient had decreased from 28.8 (on a scale of zero to 100) at the start of the study (baseline) to 15.5 and 61 patients experienced a 50 percent reduction in the drooling quotient from baseline. At the eight-month follow up, the drooling quotient increased slightly to 18.7, but the authors noted there was still a significant difference compared to baseline assessment.

Additionally, patients benefited from the botulinum toxin injection for an average of 22 weeks and 25 percent of initial responders (11.3 percent of entire population) still showed a clinically significant response to the treatment after 33 weeks, with a handful of patients experiencing continued relief from drooling after one year. "Secondary beneficial effects following injection included improved oral hygiene (reduced perioral dermatitis or reduction in halitosis) in four patients (3.1 percent) and improved speech in another four patients. These effects generally disappeared after eight months."

The authors conclude that their findings "indicate that most patients who initially respond well to injection can expect an effect to last between 19 and 33 weeks. Although the 46.6 percent success rate might appear low, its safety and efficacy make botulinum toxin a useful first-line invasive treatment if conservative measures have failed."

More information: *Arch Otolaryngol Head Neck Surg.* 2010;136[9]:873-877.

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