Drooling in patients with severe cerebrovascular injury treated with ultrasound-guided botulinum toxin injections

J.P. Crudo, a, N. Hadji, b, M. Enjalbert b
a CRF Bouffard-Vercelli, Cap Peyrefite, 66290 Cerbere, France
b CRF Bouffard-Vercelli, CH Perpignan, Cerbere, France

*Corresponding author.

Keywords: Sialorhea; Botulinum toxin; Ultrasound guidance; Salivary gland disease; Improved morbidity

Introduction.—Drooling is a common problem after severe brain damage (vegetative state). Our study focuses on ultrasound-guided botulinum toxin injections in the salivary glands to control hypersialorrhea.

Material and Methods.—We use a Toshiba ultrasound Mondovision 8000 with an 8 MHz probe array. Ultrasound guidance is necessary for precise injections. The dose used for the parotid gland is about 30 IU.

Results.—The Center Bouffard-Vercelli has eight beds for patients in persistent vegetative state. Five had an indication for botulinum toxin injection due to drooling. All were comatous head injury patients’ victims of traffic accidents. The average age was 43 years. Outcome of the therapeutic intervention was assessed with videonasal endoscopy video before and after injection.

Discussion.—All patients had swallowing disorders. The parotid gland, which produces two-thirds of the saliva, was our preferred target. Botulinum toxin blocks all cholinergic transmission including the autonomic nervous system and has a lowering effect on saliva. The doses used can reduce the production of saliva but not interrupt it. We found a decrease in the number of aspirations, which decreased from 1 per hour to 2 or 3 per day, a decrease in pulmonary aspirations, and a drop in the temperature curve. Therapeutic efficacy lasted 6 to 9 months.

Conclusion.—The use of botulinum toxin is effective against drooling and well supported. We did not observe any adverse effects in our study. This technique has improved morbidity. Further follow-up is needed to assess its effect on mortality, but we have observed better quality of life, and consequently decreased caregiver workload with the subsequent expenditure savings, which should not be underestimated.

References


Unravelling and manipulating the cerebral control of human swallowing using non-invasive brain imaging modalities

S. Mistry
School of Translational Medicine, Inflammation Sciences Faculty of Medicine and HealthSciences, University of Manchester, A109 Clinical Sciences Building, Salford Royal NHS Foundation Trust, Stott Lane, Salford, Manchester M6 8HD, UK

Eating and drinking are basic pleasures in life that most of us take for granted; yet the ease with which we perform these tasks belies their complex neurologic system of control. The act of swallowing which enables this life sustaining pleasure is a fundamental yet effortless motor activity with bilateral cerebrospinal representation. The sensorimotor cortex is known to play a role in the regulation of swallowing, acting at both volitional and reflexive levels. Cerebral injury such as stroke can result in an inability to swallow (dysphagia), which affects more than half of all stroke patients in the UK. Current dysphagia management after stroke attempts to minimize aspiration whilst waiting for slow spontaneous improvement. However, with no effective treatments that can accelerate swallowing recovery and reduce morbidity, patients are not only exposed to life-threatening complications such as aspiration pneumonia, but can also suffer from social isolation and depression. Non-invasive neurophysiological tools such as transcranial magnetic stimulation and other brain imaging modalities allow us to map brain function and can provide insight in to how and where recovery takes place, allowing us to generate effective new treatments for the future. This lecture will provide an overview of these non-invasive technologies, the knowledge of the cerebral control of swallowing we have gained through their application as well as discussing how neuroplasticity, the in-built ability of the brain to adapt to changes in circumstance, can also be artificially manipulated to drive recovery of function after brain injuries such as stroke.