Botulinum toxin for the treatment of acute-onset concomitant esotropia in Chiari I malformation

Acute-onset esotropia (ET) is a rare presentation of Chiari I malformation. The ET may resolve following neurosurgical decompression, although this is not usually immediate.¹ Where neurosurgery is not undertaken, Kowal *et al*² suggest prismatic correction or strabismus surgery. The latter may result in temporary correction of the strabismus, as the strabismus can recur and resolves only following decompression.³ Botulinum toxin (BT) has been reported as successful in one case where the ET did not resolve following neurosurgery.⁴ Despite BT being a common treatment for acute acquired concomitant ET,⁵ no previous case has been reported in which BT was used prior to neurosurgical decompression for Chiari I malformation.

Case report

A 16-year-old girl experienced diplopia during swimming, and presented to the A&E Department on the day of onset. She gave a history of occasional, brief diplopia. On examination, there was 16Δ ET at near and 20Δ ET at distance. The angle of deviation reduced on versions. Saccade to the right was possibly hypometric; no nystagmus was present. Over 2 weeks, the angle increased to 40Δ ET, saccades to the right became definitely hypometric and abducting nystagmus developed. MRI scan revealed Chiari I malformation with tonsillar descent to about 12 mm below the foramen magnum, with loss of cerebrospinal fluid (CSF) spaces indicating impaction of neural tissue (fig 1). Neurosurgery was discussed, but delayed for 8 months.

Three months after onset, the angle had increased to 45Δ ET at near and distance. Four units of BTA were injected into the right medial rectus muscle with electromyographic guidance under topical anaesthesia. Initially there was an overcorrection (12ΔXT, 5ΔRHT, with $-3\frac{1}{2}$ limitation right adduction). Following recovery of medial rectus function, 6Δ exophoria at near and 4Δ esophoria at distance were present. Eight months following BT injection there had been no recurrence of strabismus and the patient underwent neurosurgical decompression. Currently the patient is orthophoric and shows hypometric saccades to the right and left, and fine pendular-like nystagmus on right and left gaze.

Figure 1 MRI scan showing significant tonsillar descent approximately 12 mm below the foramen magnum with loss of cerebrospinal fluid spaces around the foramen magnum indicative of impaction of neural tissue.

Comment

BT restored binocular single vision (BSV) in a patient awaiting neurosurgical decompression for Chiari I malformation. Neurosurgery was delayed to fit in with the patient's education. BT was used in the expectation that repeat injections would be necessary as the aetiological cause had not been treated at this time. Following the BT, BSV was maintained for 8 months prior to decompression surgery. Recurrence of ET following strabismus surgery has occurred over a variety of time frames upwards from 3 months following strabismus surgery.⁶

Surgical decompression improves ocular manifestations such as nystagmus, but this may not be for several months.⁷ In our case, nystagmus and hypometria had not resolved 3 months following surgery.

BT should be considered as a treatment option to restore alignment in acute-onset ET due to Chiari I malformation. Further case series are required to determine the effectiveness of BT compared with strabismus surgery.

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Microfoam surgical tape as practice object for scleral sutures

Performing scleral sutures in strabismus and retina surgery poses a challenge for residents as it requires high precision and allows only little room for error, with possible complications including endophthalmitis and retinal detachment from scleral perforation or muscle dehiscence.

The human sclera consists of collagen and elastin, with a thickness ranging between 0.33 mm beneath the recti muscles, 0.66 mm at the muscle insertion and 1 mm posteriorly.

Figure 1 3M Microfoam surgical tape, 2-inch width.

The three layers of the sclera are ill defined and comprise episclera, sclera proper and lamina fusca.¹

Pig eyes, which are commonly used as practice objects for surgical procedures, are not always readily available, change their consistency after conservation in formalin and potentially present a risk for contamination or infection. Other commonly used practice objects include fruits such as oranges, bananas and grapes, or hard-boiled eggs.

Microfoam surgical tape manufactured by 3M consists of rolls of closed-cell foam and is designed for securing dressings and compression applications to joints, with a thickness of 0.8 mm and width of 1, 2 or 3 inches (fig 1). It is elastic and has an adhesive lower surface.

When used as a practice object for scleral bites, achievement of appropriate suture depth can be easily checked by lifting the superficial layer from underlying layers (fig 2). In addition, the elastic tape can be easily stretched to 0.4 mm for simulation of a thinner sclera.

Our department's retina and strabismus specialists evaluated Microfoam surgical tape as a practice object and uniformly agreed on its authentic feel, resistance, thickness and curvature when compared with the actual human sclera.

In conclusion, Microfoam surgical tape represents a readily available, cheap, storable and easily transportable alternative to pig eyes or fruits for practicing the placement of scleral sutures with authentic characteristics and immediate feedback.

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The use of voriconazole in the treatment of *Aspergillus fumigatus* keratitis

There are a few reports of the use of voriconazole for the treatment of fungal keratitis.¹⁻³ We report another case of its apparent success in *Aspergillus fumigatus* keratitis and discuss the dilemma of