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Editorial: Sausages and squints

The pharmacological correction of strabismus has been a dream for many years. Recently it has become a reality for certain forms of squint because of the careful and persistent work by Alan B Scott at the Smith-Kettlewell Institute of Visual Sciences in San Francisco. In 1973 he published[1] the results of weakening the extraocular muscles in monkeys by injecting botulinum A toxin directly into these muscles. Botulinum toxin was chosen because over 90% of patients who had eaten spoiled sausage ('botulus' is Latin for sausage) or other food contaminated with *Clostridium botulinum* had diplopia as an early symptom in an often fatal, progressive, descending paralysis of bulbar and skeletal muscles. In 1980 Scott[2] published the first results of injecting botulinum A toxin into human extraocular muscle.

Over 1000 patients have now been treated in the USA and at selected centres around the world, including 85 adults in the report by Mr Elston and his colleagues in this issue of the *BJO*. So far no untowards systemic effects have been recorded. Three patients in the USA have had inadvertent perforation of the globe by the needle, but none lost the vision of that eye. Temporary levator paralysis may result from injection of the toxin into adjacent rectus muscles, with some slight local spread of effect. The aim of treatment is to control the degree of induced paralysis of the muscle by varying the dose used, and to control the duration of the paralysis by varying the dose and by repeated injections.

The results show that botulinum toxin therapy can be effective in young adults with moderate to large angles of squint. It is particularly useful in VIth nerve palsies when early injection of the medial rectus prevents contracture, and, if there should be no recovery of lateral rectus function, surgery is not needed on the medial rectus but only on those muscles that can restore abduction. A few patients without demonstrable fusion have developed or regained binocular vision after injection has produced incomitancy during the time of muscle paralysis, with the patient using his head posture to find a point where the two eyes can work together. Threatened anterior segment ischaemia if strabismus surgery were attempted can be avoided. Although, in general, the horizontal recti are more accessible to injection therapy than the vertical, patients with dysthyroid ocular disease respond well to treatment of the tight muscle(s) in the early stages of the condition. In the USA botulinum toxin is being used in children, even congenital esotropes less than 1 year old, with appropriate anaesthesia, and the results will be followed with great interest.

Apart from strabismus the toxin has been used in the treatment of patients with severely disabling neurogenic blepharospasm.[3] Here doses of approximately four times those needed in strabismus are given, with repeated injections into the orbicularis oculi being necessary, but the relief obtained without recourse to time-consuming surgery is high.

A new therapeutic agent has been found for the treatment of strabismus and blepharospasm. Further research into the neurophysiology of its action and clinical studies will establish its eventual role. It is fascinating that one of the most powerful toxins known can be used so effectively when properly controlled.

References

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