Letter to the Editor

Strabismus and botulinum toxin☆

Estrabismo y toxina botulínica

Dear Sir,

Botulin toxin (BT) is a neurotoxin currently applied for treating strabismus, oculomotor palsy, some ophthalmological alterations as well as for many systemic diseases and, in recent years, for aesthetic interventions. BT is produced by Clostridium botulinum, an anaerobic bacteria formerly responsible for the infectious toxic clinical condition which arose after eating contaminated food and known as botulism.1

The first clinical application of BT was in 1976 when it was injected for the first time in a male. In 1991 it was approved by the FDA and NEI as a treatment for strabismus, blepharospasm and oculomotor palsy. The practical application in ophthalmological clinic was developed in the 1980s and 1990s.1,2

Initially, BT was applied in all types of strabismus with relatively low efficacy.3 Gradually its validity was analyzed for various types of strabismus and different age groups. In addition, more knowledge was obtained concerning treatment indications and contraindications of the toxin.

BT is administered through parenteral injection which, except diffusion cases, exhibits local action at the injection site. The main mechanism of action of the toxin consists in blocking the release of acetylcholine in the pre-synaptic terminal for the excitation mediator, deriving in an interruption of said process. It produces reversible chemo-denervation with a temporary effect from which the pre-synaptic terminal recovers in a variable period of time ranging between weeks and months.1

At present BT has become an additional technique for managing strabismus and oculomotor palsy. General indications are for non-restrictive strabismus.4 When we have patients with inelastic or fibrotic muscles, or when there are large scars, indication is usually surgery because it is more difficult to modify the elongation-tension curve with BT and even though improvements could be achieved the injection would have to be repeated many times, giving rise to the possibility of producing secondary effects such as vertical deviations. In these cases, treatment with BT should be indicated in acute forms.

Generally, BT is more useful in infantile endotropia, in small degrees strabismus, in some oculomotor palsy cases and in the management of special and difficult cases as a part of treatment.4

BT can also be useful for diagnosis because we are able to assess the repercussion it can have at the sensory and motor level of the patient. The evaluation of paradoxical diplopia prior to surgery, diagnosing the diffusion capacity in patients with long-standing deviations, assessing the horizontal–vertical modification after correcting one of the components, evaluation of torticollis, assessing the degree limitations of paresis/palsy/sliding, evaluation of the antagonist functional capacity and demonstrating the cosmetic situation after ocular alignment.5

The main indication for BT treatment is congenital endotropia.4 In addition, it is applied in cases with moderate or intense hypermetropia as well as in associated variable angle, or vertical surgery is better profiled if necessary. In addition, good results have been seen in acquired endotropia, in partially accommodative endotropia, in microtropia which become unbalanced after the occlusion or in patients with a certain degree of binocular vision.

Studies have also reported treatment for intermittent, congenital, consecutive, residual, and sensory exotropia as well as dissociated horizontal deviations.8 It is usually indicated in small children with the objective of correcting tropia entirely or as much as possible. It has not shown good results in permanent diverging strabismus.3-5.

It can be said that nowadays BT is a very useful pharmacological tool for diagnosis, therapy or as adjuvant for the treatment of several ophthalmological diseases such as blepharospasm, thyroid orbitopathy, nystagmus, for cosmetic use. Among these uses, strabismus is particularly significant.

☆ Please cite this article as: Sánchez Ferreiro AV, Miguéns Vázquez X. Estrabismo y toxina botulínica. Arch Soc Esp Oftalmol. 2013;88:286–287.
REFERENCES

1. Scott AB, Maggon EH, McNeer KW, Stager DR. Botulinum
2. Gómez de Liaño R, Gómez de Liaño F, Gómez de Liaño P,
   Rodríguez JM, Rodríguez J, Peñas J. Aplicación de la toxina
3. Gómez de Liaño R. Tratamiento del estrabismo con toxina
4. Gómez de Liaño R, Mompeán B, Gómez de Liaño P, Rodríguez
   JM. Tratamiento del estrabismo infantil mediante toxina
5. Gómez de Liaño R, Rodríguez JM, Gómez de Liaño P. Toxina

A.V. Sánchez Ferreiro\textsuperscript{a,*}, X. Miguéns Vázquez\textsuperscript{b}

\textsuperscript{a} Servicio de Oftalmología, Hospital del Bierzo, Ponferrada, León,
Spain
\textsuperscript{b} Servicio de Medicina Física y Rehabilitación, Hospital de Monforte
de Lemos, Lugo, Spain

* Corresponding author.
E-mail address: vanesaferreiro1980@yahoo.es
(A.V. Sánchez Ferreiro).

Available online 18 October 2013

2173-5794/$ – see front matter
© 2012 Sociedad Española de Oftalmología. Published by
Elsevier España, S.L. All rights reserved.