Short communication

Spasm of the near reflex. Treatment with botulinum toxin

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ABSTRACT

Clinical case: A 38-year-old female with diplopia and esotropia, with limitation of ocular abduction in both eyes, with full abduction after doll’s head rotation also being observed. She was diagnosed with spasm of the near reflex. Treatment with injections of botulinum toxin in both medial rectus has temporarily resolved the convergence spasm.

Discussion: Near reflex spasm is characterized as miosis, pseudomyopia, and convergent strabismus that lead to diplopia, blurred vision, headache, and variable, progressive, and intermittent esotropia. As the spasm worsens there will be limited ocular versions and ductions simulating a sixth nerve palsy. Botulinum toxin may be effective in some cases.

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Espasmo del reflejo de cerca. Tratamiento con toxina botulínica

RESUMEN

Caso clínico: Mujer de 38 años con diplopia y endotropia. Limitación total de la abducción en AO al explorar las versiones, que se normalizan al explorar el reflejo de los ojos de muñeca. Es diagnosticada de espasmo del reflejo de cerca (ERC) y tratada con inyecciones repetidas de Botox en rectos medios, resolviéndose temporalmente el espasmo.

Discusión: El ERC se caracteriza por miosis, seudomiopía y convergencia que producen diplopia, visión borrosa, cefalea y endotropia variable, progresiva e intermitente. Se puede confundir con una paresia bilateral del VI nervio. El tratamiento con inyecciones repetidas de bótox puede ser efectivo en algunos casos.

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Introduction

The near reflex spasm (NRS) is characterized by myosis, excessive accommodation and convergence. It is possible to find convergence spasms without accommodation spasms, or accommodation spasms on their own.\(^1\)

At the clinical level, said spasm comprises diplopia, blurred vision, headaches and variable, progressive and intermittent endotropia.\(^1,2\) NRS is more frequent in women with prior history of strabismus and hypo-accommodation. The spasm is provoked by ocular examination, stimulating the fixation to light or an object, or when exploring versions. It also includes orthophoria alternating with transient and progressive convergence movements. It is a bilateral condition but it can also be asymmetric. As the condition worsens, limitation in versions is encountered whereas monocular ductions are normal. If the condition evolves, limitation of the latter movements can also be encountered and the frequency and duration of outbreaks increase.\(^1,2\)

The cause is generally functional, although an organic origin must be discarded (posterior fossa tumors).\(^3,4\) Some antidepressant drugs could worsen the condition. The prognostic worsens when it becomes chronic. There is no entirely effective treatment.\(^2,4\)

Clinic case

Female, 38, with Ménière disease and fibromialgia in treatment with anxiolytics and antidepressants, who refers diplopia, blurred vision, headaches and variable, progressive and intermittent esotropia with 3 years evolution. In addition, the patient referred increased frequency and duration of episodes. Neurological examination, imaging and neurophysiological tests produce normal results. The ophthalmological exploration revealed corrected VA of one in RE under cyclopegia and variable VA without cyclopegia from 1/3 to 2/3. Refraction without cyclopegia was: -3.1-75° to 175° (RE) and -3.5-0.5 to 10° (LE). Refraction with atropine: +0.75-1.5 to 180° (RE) and +0.25 +0.75 to 110° (LE).

The motor examination showed orthophoria in the cover test, alternating with transient and progressive convergence movements with distance and near fixed gaze and in superior gaze (Fig. 1), with severe but intermittent limitation of LE abduction, which is moderate in RE when exploring versions. Monocular ductions are normal. Three months after prescribing optic correction obtained under cyclopegia and atropine eye drops (one drop a day), the condition worsened with abduction limitation in LE in ductions and versions, without reaching the median line. The frequency and duration of episodes increased (Fig. 2).

NRS is diagnosed, prescribing treatment with botox injections (Botox®, Allergan, Inc, Irvine, California, USA) in mean rectus (4 injections: 2.5-5 u.i., 8 months between each injection). This produced a temporary resolution of the convergence spasm, myosis and pseudo-myopia, with consecutive exotropia after each injection. At present, the patient rejected additional injections and maintains exotropia alternating with variable endotropia when fixing the gaze. Occlusive therapy must be maintained to avoid diplopia (Fig. 3).

Discussion

NRS is a disease with very typical characteristics, although endotropia and lateroverision limitations could confuse the condition with bilateral VI Nerve palsy.\(^1\) However, the normalization of the movements when exploring ductions and observing the patient when the gaze is not fixed, as well as the orthophoria and variable endotropia periods discards bilateral VI Nerve palsy.

NRS has a poor prognostic when involving the entire near reflex triad and it becomes worse with chronicity.\(^1\) No fully effective treatment is available. However, several measures have been proposed, the initial prescription including atropine, homatropine or cycloplegic combined with positive lenses, although this would only be useful in isolated accommodation spasm cases. If convergence is also involved, atropine would not be enough to resolve the spasms. Alternative treatments have been proposed such as monocular

Fig. 1 – Endotropia with near gaze vision fixing.

Fig. 2 – Impossibility of reaching the median line when exploring LE abduction.
occlusion, prisms and orthoptic exercises, albeit without satisfactory results.\textsuperscript{1,2}

The botulin toxin injection seems to be a logical treatment because it is used for muscular spasms in cerebral palsy. Very few articles have been published on this treatment, which seems to be effective in some cases (59%) although it requires repeated injections and occlusive therapy.\textsuperscript{2,8,9}

The patient of the present report exhibited all NRS expressions as well as progressive deterioration. Symptoms improved with the Botox injection although the patient remained with consecutive exotropia with over 6 months evolution which required occlusive treatment. The patient did not exhibit ptosis or vertical deviation, which matches other published data where the percentage of side effects is lower than in other diseases such as VI nerve palsy.\textsuperscript{2,10} After 8 months, the spasm relapsed despite the exotropia and the patient was retreated with botulin toxin. Some authors consider early botulin toxin treatment convenient as extended exotropia could worsen the spasm.\textsuperscript{9} However, there are very few published data to provide effective treatment recommendations.

**Conflict of interests**

No conflict of interests has been declared by the authors.

**REFERENCES**