POST-TRAUMATIC CYCLODIALYSIS CLEFT TREATED WITH TRANSSCLERAL DIODE LASER

CICLODIÁLISIS POSTRAUMÁTICA TRATADA CON LÁSER DIODO TRANSESCLERAL

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ABSTRACT

Case report: A 28-year-old man who received a blunt trauma in his left eye, presented with persistent ocular hypotony (intraocular pressure: 4 mmHg) as well as loss of visual acuity (0.4), optic disc edema and chorioretinal folds in the macula. The foveal thickness, measured by optic coherence tomography, was 326 microns. Using ultrasound biomicroscopy, a desinsertion of the nasal iris and a 360º choroidal detachment was observed. The hypotony did not respond to conservative treatment and 10 months after the trauma he underwent a transscleral cyclopexy with contact diode laser. One year after the laser treatment the visual acuity was 1.0, the intraocular pressure 14 mmHg and the foveal thickness 240 microns.

Discussion: Transscleral cyclopexy with diode laser may be an effective alternative treatment to resolve post-traumatic cyclodialysis that does not respond to medical treatment (Arch Soc Esp Oftalmol 2009; 84: 47-50).

Key words: Cyclodialysis, transscleral diode laser, ocular hypotony, hypotony maculopathy.

RESUMEN

Caso Clínico: Paciente varón de 28 años, que tras traumatismo contuso en su ojo izquierdo, presenta una hipotonía ocular persistente (presión ocular 4 mmHg) acompañada de pérdida de agudeza visual (0,4), edema de papila y pliegues coriorretinianos a nivel macular. El grosor foveal, medido con tomografía de coherencia óptica, era de 326 micras. Mediante biomicroscopia ultrasónica se aprecia una desinserción de iris nasal y un desprendimiento coroideo de 360º. El cuadro no cede con tratamiento conservador, por lo que 10 meses tras el traumatismo se le realiza una ciclopexia transescleral con láser diodo de contacto. Un año tras la aplicación del láser, la agudeza visual era 1, la presión ocular 14 mmHg y el grosor foveal 240 micras.

Discusión: La ciclopexia transescleral con láser diodo puede ser una alternativa eficaz para la resolución de ciclodíálisis postraumáticas que no responden a tratamiento médico.

Palabras clave: Ciclodíálisis, láser diodo transescleral, hipotoníaocular, maculopatía por hipotonía.
INTRODUCTION

Cyclodialysis occurs due to the deinsertion of the ciliary body from the scleral spur. It can be caused by traumatism with concussion or iatrogenically after filtrating glaucoma surgery. One of the consequences of cyclodialysis is the opening of a communication pathway between the anterior chamber and the supra-choroidal space, which determines ocular hypotony sometimes accompanied by choroidal detachment and chorio-retinal folds which affect the macula and can cause loss of visual acuity (VA).

The treatment aims at normalizing intra-ocular pressure (IOP), which usually brings about a VA improvement. When the conservative medical treatment fails, there are multiple options, most of them involving surgery. This paper presents a case in which the late application of trans-scleral diode laser was able to revert hypotony and improve VA.

CASE REPORT

A 28-year old male patient with a concussion traumatism in his left eye received in a fight. The initial emergency exploration showed an important VA reduction due to hyphema. IOP was of 8 mmHg and the eye fundus revealed a Berlin edema. The patient was treated with relative rest, cyclopegy, topical and systemic corticoids. After the reabsorption of the hyphema, VA improved to 1 but the IOP was of 4 mmHg. Accordingly, treatment was continued with restriction of physical efforts, atropine 1% and topical corticoids. However, the ocular hypotony persisted (4-6 mmHg). In addition, the VA diminished to 0.4 and the patient began to develop retina-choroidal folds and papilla edema (fig. 1). Interrupting the corticoids treatment did not improve the clinical condition.

The gonioscopic study showed a grade 4 open angle without other alterations. Ten months after the concussion an ultrasound biomicroscopy (UBM) was carried out which revealed a tear in the iris root in the nasal area with a 360° ciliar-choroidal detachment (fig. 2). The optical coherence tomography (OCT) showed a foveal thickening (326 microns).

In the absence of response to the conservative treatment, it was decided to perform a trans-scleral cyclopexy with contact diode laser utilizing the G probe of the Oculight SLx (Iris Medical Instruments, Mountain View, California) diode laser. The procedure was done under retro-bulbar anesthesia with the application of 10 impacts each (power 3 watts, exposure time 3 seconds) over the cyclodialysis area described with the UBM.

No changes were observed in the VA or the IOP during the first 24 hours but, after the first week, a gradual increase of IOP was observed, reaching 12 mmHg at month 6, accompanied by improved VA and progressive reduction of the papillary edema, chorio-retinal folds (fig. 1B) and foveal thickness (table I). By means of UBM we verified the closure of the cyclodialysis through a peripheral anterior synechia and the disappearance of the choroidal detachment (fig. 2B), which explained the normali-

Fig. 1: A) Papilla edema and folds at the macular level. B) Resolution of the papillary edema and improvement of the macular folds 3 months after application of the laser.
DISCUSSION

Cyclodialysis establishes a direct outlet pathway for the aqueous humor to the supra-choroidal space, which determines a persistent ocular hypotony which may compromise vision as a result of associated complications such as choroidal detachment, athalamia, chorio-retinal folds in the macular region, optic nerve edema, retinal venous stasis and cataracts. The loss of vision secondary to macular edema can be permanent if not treated in time. However, the period after which irreversible alterations occur in the eyesight is not clear.

Due to its low prevalence, it is difficult to determine the best treatment for cyclodialysis. All treatments aim at changing the location of the meridional portion of the ciliary body over its insertion in the scleral spur and this closes the flow of aqueous humor towards the supra-choroidal space, the cause of the maculopathy and papillary edema due to hypotony.

Initially, a conservative treatment is recommended, utilizing atropine 1% and minimum doses of corticoids. Aminlari et al recommend suspending corticoid treatment and continuing with atropine 1% several times a day for 6-8 weeks, in descending dosage if the condition improves (1). In our patient, topical corticoid treatment, its suppression in addition to atropine eye drops did not resolve the cyclodialysis. Spontaneous healing cases have also been described (2). A spontaneous closure is rare after 6 weeks. Even though a delay in treatment exceeding 8 weeks could increase the risk of permanent vision loss, the time it can be maintained is not clear. There are cases of VA recovery after 7 years of maculopathy with hypotony (3). In this case, in spite of the 10-month delay in the resolution of hypotony, the VA did return to normal values.

Multiples types of surgery have been described: direct cyclopexia, diathermia, scleral cerclage, vitrectomy with cryotherapy and obstruction with gas, etc. However, before recurring to surgery, laser treatments can be carried out. Joondeph (4) described the use of argon laser in the dialysis area, an exposure of 0.1 seconds and 1-1.5 watts of power, which may be repeated if necessary. For performing this technique a good gonioscopic visualization of

Table I. Evolution of different parameters after trans-scleral cyclopyexy

<table>
<thead>
<tr>
<th></th>
<th>IOP (mm Hg)</th>
<th>VA</th>
<th>Foveal thickness (µ)</th>
</tr>
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<tbody>
<tr>
<td>Pre</td>
<td>4-6</td>
<td>0.2</td>
<td>326</td>
</tr>
<tr>
<td>7d</td>
<td>12</td>
<td>0.4</td>
<td>314</td>
</tr>
<tr>
<td>1 month</td>
<td>10</td>
<td>0.5</td>
<td>263</td>
</tr>
<tr>
<td>3 months</td>
<td>11</td>
<td>0.6</td>
<td>240</td>
</tr>
<tr>
<td>1 year</td>
<td>14</td>
<td>1</td>
<td>240</td>
</tr>
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the area to be treated is essential. It is usually accompanied by painful hypertension peaks (1) which are resolved with medical treatment. Another modality is photocoagulation with argon laser.

Photocoagulation with trans-scleral Nd:YAG laser (20 applications in 2 lines 6 J at 2-3 mm of the limbus) and trans-conjunctival cryotherapy have been utilized successfully, although hypertension peaks are also a side effect.

Amini (5) described for the first time the use of trans-scleral cyclophotocoagulation with diode laser in two patients with persistent cyclodialysis (one post-traumatic case and one after filtrating surgery with anti-metabollites) which were resolved after the application of two rows of 14 impacts (power of 2.5 w and exposure time of 2 sec.) over the cyclodialysis area. None of the cases exhibited hyper-tension peaks post-op. In our case, we applied more power (3 watts) and a longer exposure time (3 sec.) to enhance the coagulation effect of the laser. The effect of the diode laser on cyclodialysis can be observed in the UBM in which we found the appearance of a peripheral anterior synechia in the involved area. As in the previously described cases, the utilization of diode laser was not accompanied by post-op high pressure, in contrast with the rest of surgical procedures for cyclodiagnosis. One explanation could be that, in addition to enhancing the adherence of the cilliar body, a partial ablation of the cilliar processes occurs which reduces the production of aqueous humor.

In spiet of the long time elapsed with hypotony (10 months), our patient exhibited a progressive improvement of VA, correlated with a reduction of the macular edema shown by OCT. Accordingly, extended hypotony is susceptible to treatment without producing irreversible effects for the eyesight.

Cyclopesia with diode laser is an alternative for treating persistent cyclodialysis which features great advantages due to being a fast, simple and hardly invasive treatment which can be carried out on an out-patient basis. As it does not require penetration of the ocular globe, post-op infections are avoided. In contrast with other treatments, it does not determine the production of hyper-tension peaks and also has the advantage of not requiring a direct visualization of the cyclodialysis area, which can be located prior to the treatment by means of UBM. In case of failure, it would be possible to carry out an additional treatment or select other, more aggressive therapeutic options.

REFERENCES