PHOTOCOAGULATION AND IMMUNOSUPPRESSOR IN TREATMENT OF SUB-RETINIAN CYSTICERCOSIS

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ABSTRACT

Presentation of a case with sub-retinian cysticercosis at the macular region and papillo-macular bundle, measuring 2,2 papillar diameters. The patient was treated with photocoagulation assisted by immunosuppressor and steroids.

Several forms of treatment for sub-retinian cysticercosis are presented.

The main disadvantage of destroying the cysticercus bigger than 1,5 papillar diameters inside the eye, instead of removing it by surgical means, is the serious inflammatory reaction caused by liberation of toxic substances (1), (2), (3).

Contrary to results referred to in the literature, maybe due to the action of the immunosuppressor and steroid, the inflammatory reaction was slight and had no consequences.

INTRODUCTION

The finding of an intra-ocular cysticercus is no novelty for the ophthalmologist. However, in some cases, there still are doubts as to the best form of treatment. Exactly this disagreement lead us to publish the present case. It was a sub-retinian cysticercus, situated at the posterior pole, at the region of the macula and papillo-macular bundle.

A review of the literature showed the following ways of treatment: a) await its migration to the vitreous chamber;

- b) injection of a chemical agent; (4)
- c) transvitreous diathermo-coagulation; (5)
- d) trans-scleral diathermo-coagulation; (6)
- e) photocoagulation; (7)
- f) surgical removal. (8)

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All these forms of treating sub-retinian cysticercus are liable to criticism, but after an analysis of each one, photocoagulation and surgical removal appear to be the most frequently used.

In 1970, Almeida and Oliveira presented a study on 238 cases, 85 being sub- or intra-retinian, and in all of them they preferred surgical removal (8). When the cysticerus is situated at the posterior pole, especially the region of the macula and papillo-macular bundle, surgical approach becomes more difficult and the surgical result is impaired by the surrouding and unforeseeable choroidal and retinian vessels (7). There is danger of vascular occlusion and haemorrhages, and impossibility of removing the parasite due to cicatricial adherence to the retina (8). We should consider further, the inflammatory complications of the uvea which may lead to detachment of the retina and atrophies of the eye ball (9) (10).

Rocha and Galvão, in 1963, published the first case of photocoagulation, and in 1966 they presented their results in 8 cases treated by this method, at the French Society of Ophthalmology. They concluded that this is the absolute choice treatment for retinian cysticercus of the posterior pole, measuring 1,5 papillar diameters (P. D.) or less. For 1,5 P. D. and 3,0 P. D., photocoagulation would not be indicated due to the inflammatory reactions produced inside the eye by death of the parasite and its later decomposition. For bigger sizes, photocoagulation would be inoperative (3) (7).

As we see, any one of the methods chosen present advantages and disadvantages for the patient, and both impair or even abolish central vision.

In our case, we chose photocoagulation. Fearing the inflammatory reactions caused by massive liberation of the products existing in the cysticercus, we decided to associate an immunosupressor, metotrexate, to the steroid.

CASE REPORT

Anamnesis and case history: E. R. L., turner-mechanician, 32 years old, complained of feeling a kind of "dust" in the right eye, with low visual acuity, during about 20 days. He consulted an ophthalmologist, who sent him to our service at "Escola Paulista de Medicina". On his arrival, the case had an evolution of 45 days. He no longer had the sensation of a strange body, but the low visual acuity persisted. He referred also, to perceive "something" moving when his eyes were shut.

Ocular examination: Right eye-Vision of fingers at a distance of 2 m. Tension, 17 mm Hg. At the anterior segment, small precipitates at the posterior aspect of the cornea and Tyndal (++) in the acquous humor. Iris, pupilla and crystalline were normal. Biomicroscopy of the vitreous humor revealed a Tyndal (++). At the posterior pole, at the region of the macula and shifted towards the papilo-macular bundle, a yellowish vesicle is observed, with clear borders and a more intense and opaque yellow at

the central region. Its size was about 2,2 (P.D.). During the examination, typical undulatory movements were observed, which lead us to the diagnosis of cysticercosis. Some retinian vessels passed over the vesicle. The surrouding retina was edemaciated and presented an haemorrhagic area benneath the parasite. The papilla was normal (photo 1).

Left eye-Vision 20/20. Tension, 16 mm/Hg. No abnormalities were found in the remaining clinical and laboratory examination. Special attention was given to the protoparasitologic (several tests) and neurological examinations.

The visual fields will be described later.



PHOTO 1 — Aspects of the posterior pole of the right eye on arrival, when the diagnosis was established: D) Disc, C) cysticercus, E) scolex, H) haemorrhage.

Treatment and evolution: The patient entered the hospital on October 2, and began taking 80 mg prednisone a day, by oral way. On the same day he received 25 mg metotrexate, by intravenous administration. On October 4, photocoagulation was performed. Four hours prior to the same, 5 mg metotrexate were injected (sub-tenonially).

Photocoagualtion: Broad mydriasis (atropine 1% + phenylefrine 10%). Retrobulbal injection of 4 ml of a 2% lidocain solution. The eye became exophthalmic and paresic. The photocoagulator (Olivella-Garrigoza) was armed with minimal power and 12 shots were discharged around the cysticercus, for barrage effect, and 4 to 5 discharges upon the parasite. Ophthalmoscopic control immediately after the session did not show any change but the signs of the barrage discharges. The cysticercus still presented undulatory movements.

Fifteen hours after photocoagulation, at the central area the barrage was observed, and instead of the characteristical aspect of the parasite, a yellowish structure appeared, measuring slightly more than 1,0 P.D. (Photo 2). The fundus was dim, the vitreous was detached at the area corresponding to photocoagulation, with some precipitates. The neighbouring retina was edematous.



PHOTO 2 — Fifteen hours after photocoagulation: D) disc, C) cystic ercus, Arrows — places of discharges at photocoagulation.

This same day, encore 5 mg of sub-tenonian metotrexate ware injected.

On October 10, 25 mg metotrexate were injected by endovenous application. On the 18 th., fourteen days after photocoagulation, endovenous metotrexate was reapeated, with the same dosage as before. Biomicroscopy of the fundus presented a lesser dimness of the fundus, with less inflammatory reactions at the retina. The diameter of the parasite is smaller than 1,00 P. D., half-way betwen macula and papilla. Retinography and fluoresceinography, performed on that same day, showed alterations of the pigmentary epithelium, characteristical for the post-photocoagulatory period (Photos 3 and 4). During the patient's internment, haemathological examinations were carried out to control the administration of metotrexate and steroid. As local cares, atropine and dexametasone collyrions were applied.

On October 23 the patient was discharged from the hospital. He complained of perceiving a small and dark spot in front of the right eye. Biomicroscopic control revealed slight edema of the retina and the mentioned vitreous alterations.

A week later, he returned to the out-patient ward in practically the same condition.

Prednisone doses were reduced gradually after discharge from the hospital, and completely suppressed after three weeks.

Fourty-seven days after photocoagulation all medication was descontinued. Examination of the posterior pole showed fibrous alteration of the viterous, adherent at the corio-retinian cicatrical plate, pigment mobilization and some haemorrhagic points and vascular tortuosity at this area (Photo 5).

Three months afterwards the picture was similar, only without the hemorrhages. This is the patient's present condition.



PHOTO 3 — Fourteen days after photocoagulation: D) Disc, C) cysticercus (dead).



PHOTO 4 — Arterio-venous stage of fluoresceinic angiography, 14 days after photocoagulation: D) disc, C) dead cysticercus. Arrows-alterations of pigmentary epithelium.



<code>PHOTO 5 — Fourty-seven</code> days after photocoagulation: D) disc, C) dead cysticercus; H) haemorrhages. Arrows — fibrotic alterations of the vitreous.

Visual Fields demarcation of the visual field of the right eye was obtained in Goldmann's perimeter, with the patient looking straightahead and without corrective lenses. White targets were used, with relative size and intensity III x 2 and II x 1 for determination of isopteres (peripheral and central) and delimitation of the scotoma.

Two days before photocoagulation, the visual field was: normal peripheral isoptere; central isoptere slightly contracted at the superior temporal area. Oval central scotoma, envolving the blind spot (fig. 1).

Fourteen days after photocoagulation: normal peripheral isoptere. Central isoptere with accentuated contraction in almost the whole superior half of the visual field and part of the inferior temporal area, adjoining the existing central scotoma. Scotoma for target III x 2 remained the same size (fig. 2).

Fourty-eight days after photocoagulation: peripheral isoptere the same size. Central isoptere: remains only as a half-moon at the inferior nasal portion and inferior temporal part. Central scotoma slightly reduced for target III x 2 (fig. 3).

The central scotoma is due to the sub-retinian cysticercus. The deterioration of central sight for target II x 1 is due to the photocoagulation, which impaired more the inferior than the superior retina, without consequences for target III x 2.



FIG. 1 - Visual field before beginning of treatment.

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DISCUSSION

In the blood flow, a cysticercus larva can reach the eye ball through the central artery of the retina or the ciliary arteries.

The diagnosis of sub-retinian cysticercus presents no difficulties in its characteristical form, retinian vessels passing over the vesicle,' and specially its undulatory movements.

The main concern therefore is not diagnosis, but the proper form of treatment. As said before, doubts remained whether surgical removal or photocoagulation should be used. In both treatments the final result is always loss of central visual acuity. Most authors agree as to the complications resulting from a surgical removal: 1) technical difficulties in approaching the area of the macula and location of the parasite; 2) cicatricial adherence of the parasite to the retina; 3) uveal complications leading to detachment of the retina; and 4) trophic and haemorrhagic complications of the eye ball due to the unforeseeable distribution of nerves and vessels in this region. Even in the hands of experimented surgeons, such incidents happen unexpectedly (10).

All criticism made to methods aiming the destruction of the parasite inside the eye mention the spontaneous inflammatory picture of an exhudative choroiditis, caused by decomposition of the parasite. As a matter of fact, these reactions, when uncontrollable, may lead to catastrophic results. We tried to block this kind of reponse by adding a steroid to the immunosuppressor.

The actions of the immunosuppressor and steroid are not entirely known.

Probably, besides the partial inhibition of the humoral and cellular immunitary response, they have also an unspecific anti-inflammatory effect, inhibiting exhudative and allergic phenomena. Furthermore, there is evidence of the usefulness of the association of steroids and immunosuppressors, to obtain good effects with smaller doses (11).

Two kinds of substances should be considered when studying the abrupt destruction of the intra-ocular cysticercus: a) a immulogical known substance of the organism, the liberation of which may produce a rapid inflammatory reaction, and b) a substance immunologically as yet unknown, whose immunological responce appears days later, being responsible for the gradual worsening of the inflammatory picture, and remaining in the eye for a period long enough to find recently produced competent immunologic elements (12). The immunosuppessor, together with the steroid, would reduce the exhudative phenomena as well as the immunologic response of the eye to known antigens and, mainly, block the primary response, even if partially.

Metotrexate, with specific action on the primary (11) (13) immunitary reaction, partical action on the anmnesic response, without effect upon circulating antibodies, (11) would avoid the development of hypersensibility (13). For a better effect, however, it should be applied during the first week after the challenge (14), if possible before the contact with the antigen and before informed cells begin to multiply (15).

Metotrexate was applied by sub tenonian way with this purpose and as an attempt to reduce the total dose necessary to block the ocular immunologic reaction (16) (17) (18).

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