Short communication

Goldmann-Witmer, definitive diagnosis in unifocal helicoid choroiditis

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A B S T R A C T

Case report: A 20-year-old healthy patient consulted due to acute loss vision in his left eye. A fundus examination showed a macular alteration compatible with unifocal helioid choroiditis, characterized by being an atypical inflammatory yellow-white, round, single lesion of approximately an optic disk in diameter. The etiology study detected low Antitoxoplasma gondii IgG (immunoglobulin) titers.

Discussion: The non-specificity of the serology and the atypical characteristics of the lesion is a limitation in the diagnosis. The Goldmann-Witmer coefficient may be useful in the diagnosis of atypical lesions, by comparing the concentration of IgG from the serum and aqueous humor.

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Goldmann-Witmer, diagnóstico de certeza en coroiditis unifocal helioide

R E S U M E N

Caso clínico: Paciente sano de 20 años con pérdida de visión aguda en el ojo izquierdo. Al examen del fondo del ojo presentó una alteración macular compatible con coroiditis unifocal helioid caracterizada por ser una lesión inflamatoria atípica redondeada, solitaria, blanca-amarillenta, de aproximadamente del tamaño de un disco óptico. En el estudio etiológico se detectó leve positividad serológica de IgG (inmunoglobulinas G) Antitoxoplasma gondii.

Discusión: Una serología inespecífica y las características atípicas de la lesión limitan el diagnóstico. El coeficiente Goldmann-Witmer puede ser útil en el diagnóstico de lesiones localizadas al relacionar concentraciones entre IgG séricas y humor acuoso.

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** Case report selected as a communication at the 89th Congress of the Ophthalmological Society of Spain.

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Case report

Patient, 20, who visited due to diminished vision in left eye with 2 days evolution associated to metamorphopsia. Examination revealed a visual acuity of 20/20 in the right eye and 20/200 in the left eye, without inflammatory signs in anterior pole. Ocular fundus exploration showed a yellow-whitish lesion in the macular area, inferior and temporal to the fovea, associated with adjacent retinal hemorrhage. High definition optic coherence tomography HD-OCT (Cirrus SD-OCT, Carl Zeiss, Meditec, Dublin, CA, USA) over the lesion area showed a serous retina detachment with external retina edematization compatible with retinitis (Fig. 1A–C). Angiography showed vasculitic components in the inferior arch with perilesional exudation in late stage (Fig. 2).

The empirical treatment of choice consisted in 60 mg of prednisolone daily, associated to 100 mg of trimetoprim and 800 mg of sulfamethoxazole every 12 h due to suspected toxoplasmosis infection. In the etiology study, chest X-ray, ECA, calcium in serum, Mantoux, treponemal and non-treponemal tests, human immunodeficiency virus (HIV) serology, hepatitis C and B virus, bartonella, borrelia, brucella, coxiella, rickettsia, toxocara were all negative, excepting a weak serological

Fig. 1 – Left eye fundus at retinal lesion diagnostic time (A) characteristics compatible with unifocal helioid choroiditis due to size of approximately one optic disk, rounded shape, white-yellowish color, associated with intraretinal hemorrhage, inferior perifoveal and temporal location. (B) Juxtafoveal HD-OCT locates the inflammatory activity in the external retina, exhibiting retinal edematization and neuroepithelium serous detachment. (C) Over RPE hyperplasia region in OCT, retinal fibrosis is described with slight RPE detachment. (D) Evolution of the lesion after 1 year follow-up with VA of 20/20. (E) Complete resolution of serous and retina detachment and juxtafoveal retinal edema, with retinal fibrosis (F) secondary to toxoplasmosis retinitis.

Fig. 2 – Fluorescein angiograph in late times, with vasculitic components in inferior arches and perilesional extravasation with associated screen effects in inferior region due to pigment epithelium hyperplasia and intraretinal hemorrhage.
typing for IgG Toxoplasma gondii (T. gondii) with high avidity (above 0.8), compatible with an old infection.

Due to the proximity of the lesion to the foveal area and the weak serological title for toxoplasma, the Goldmann-Witmer was performed (assessing IgG concentration in peripheral blood and aqueous humor on the basis of the following formula: $C = C1/C2$ where $C1$ is a title for IgG anti-T. gondii in the aqueous humor/overall IgG concentration in aqueous humor, $C2$ is the same ratio but in serum). In the calculation, the aqueous humor level was 4 times higher than those in blood, with the microbiology department considering a positive portion after 2 times said level.

After 1 week of treatment, inflammation diminished and visual acuity in the left eye increased up to 20/40. After 3 weeks, visual acuity rose to 20/20 with slight reduction of the lesion size. In the monthly checkup, increased pigment epithelium hyperplasia was observed with retinal fibrosis in the area of the helioid single focus choroidal lesion. At 1 year of follow-up, the patient exhibited scarring typical of toxoplasmic retinitis (Fig. 1D–F).

**Discussion**

In 1997, Hong et al. described an inflammatory choroidal lesion in 6 patients characterized by round shape, isolated, yellow-whitish and approximately the size of an optic disk. They named the lesion as unifocal helioid choroiditis due to its sun-like appearance. In 4 of said patients, the lesion was associated with positive serological studies for histoplasmosis, one with toxoplasmosis although the sixth patient exhibited no relationship with infectious agents. Bartonella, a microbiological agent responsible for the cat scratch disease has been described as a possible etiological cause for this condition.

In Europe, toxoplasmosis is the most frequent etiological cause of unifocal helioid choroiditis. For this reason the patient was treated empirically for said condition. However, unifocal helioid choroiditis is a nontypical lesion which until now has been related with infections by means of positive systemic serology, a diagnostic that in our environment is limited by the high sero-prevalence of T. gondii among the healthy population (31.18–43.79%) which compromises its usefulness as a certainty diagnostic.

The Golmann-Witmer coefficient relates systemic infectious serology titles with a localized focus, which is very helpful in the diagnostic and treatment of nonspecific, isolated or atypical ophthalmological lesions.

**Conflict of interests**

No conflict of interests was declared by the authors.

**REFERENCES**