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CASE REPORT

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GHOST CELL GLAUCOMA: CLINICAL CASE

GLAUCOMA DE CÉLULAS FANTASMAS: CASO CLÍNICO

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ABSTRACT

Introduction: Ghost cell glaucoma (GCG) is a very rare secondary open angle glaucoma, in which there is a sustained increase in intraocular pressure (IOP) due to obstruction of the trabecular meshwork (TM) due to the passage of ghost cells (GC) from the vitreous into the anterior chamber, after a vitreous hemorrhage (VH). **Clinical Case:** We present the case of a male patient with a history of vitreous hemorrhage and sustained IOP elevation in the right eye (RE). Medical treatment was insufficient, for this reason surgical treatment was required. Postoperative evolution was advantageous. **Conclusion:** This pathology should prefer the differential diagnosis of traumatic glaucomas, correlating high clinical suspicion and histological confirmation.

Keywords: Glaucoma; Ghost cells; Intraocular pressure. (Source: MESH-NLM)

RESUMEN

Introducción: El glaucoma de células fantasmas (GCF) es una glaucoma secundario de ángulo abierto muy poco frecuente, en donde hay una elevación sostenida de la presión intraocular (PIO) por obstrucción de la malla trabecular (MT) debido al paso de células fantasmas (CF) del vítreo hacia la cámara anterior, luego de una hemorragia vítrea (HV). **Caso Clínico:** Presentamos el caso de un paciente varón con antecedente de hemorragia vítrea y elevación sostenida de la PIO en el ojo derecho (OD). El tratamiento médico fue insuficiente, por tal motivo se requirió de tratamiento quirúrgico. La evolución postoperatoria fue favorable. **Conclusión:** Esta patología debe considerarse en el diagnóstico diferencial de los glaucomas traumáticos, correlacionando la alta sospecha clínica y la confirmación histológica.

Palabras clave: Glaucoma; Células fantasmas; Presión intraocular. (Fuente: DeCS- BIREME)

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INTRODUCTION

Ghost cell glaucoma (GCF) is a secondary open-angle glaucoma that occurs after a long-lasting vitreous hemorrhage (VH), in which erythrocytes in the process of degeneration called "ghost cells" (GC) participate, which pass into the anterior chamber (AC) obstructing the trabecular meshwork (TM) and with it the flow of aqueous humor drainage, raising intraocular pressure (IOP) [1].

Since its first description by Campbell and his collaborators in 1976, Ghost Cell Glaucoma (GCF) has been related to multiple processes of variable etiology, including traumatic and surgical events (pars plana vitrectomy, cataract extraction), metabolic, pharmacological, toxic (snake bite) and even spontaneous [2]. It is a relatively infrequent disease at present, there have been few cases and series published regarding this pathology, making it difficult to obtain data on the prevalence and incidence of this disease [3,4]. The diagnosis is clinical with histological confirmation in aqueous or vitreous humor, where it is possible to visualize GC under hematoxylin-eosin staining. In the differential diagnosis, hemolytic glaucoma, siderotic and hemosiderotic glaucoma, which are less frequent, must also be excluded, as well as avoiding confusion with neovascular glaucoma, uveitic glaucoma and endophthalmitis [1,5].

The primary objective of the treatment consists of a correct management of IOP, to avoid damage to the optic nerve and the visual field. If there is refractory to medical treatment with ocular hypotensive drugs, surgical treatment should be considered. Within surgical treatment there are various therapeutic options such as anterior chamber lavage and pars plana vitrectomy; For glaucoma refractory to medical treatment due to chronic obstruction of the trabecular meshwork by GC, trabeculectomy or implantation of valved or non-valved drainage devices can be considered [1,2,6].

We present the case of a male patient diagnosed with GCF. We emphasize the clinical presentation and cytological confirmation of this disease and the importance of being considered in the differential diagnosis of traumatic glaucomas.

CLINICAL CASE

We present the case of a 49-year-old man, who attended due to decreased visual acuity and pain in the right eye (RE). He refers a history of Type II Diabetes mellitus under treatment and an episode of ocular trauma due to the impact of a soccer ball on his RE approximately 2 months ago. On the ophthalmological examination of the RE, he presented a better corrected visual acuity (BCVA) of counting fingers at a distance of 1 meter. The IOP was 40 mmHg. Slit-lamp examination of the anterior segment showed 1+ corneal edema, mild conjunctival hyperemia, formed anterior chamber, 3+ Tyndall's blood count (Figure 1).

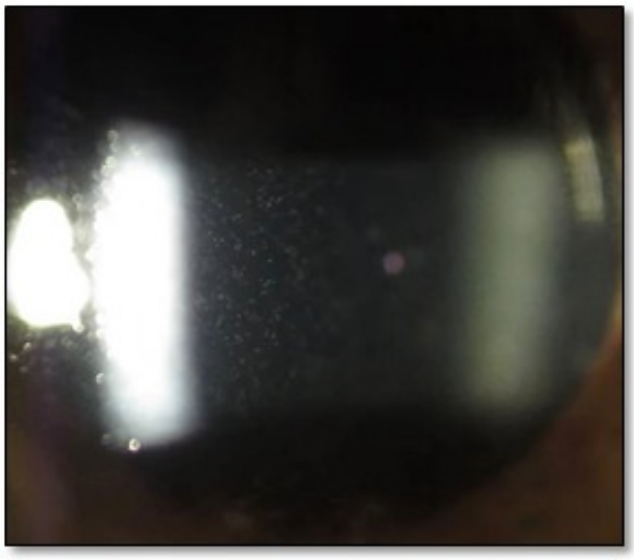

Figure 1. Biomicroscopy of the anterior segment of the RE. Presence of hematic Tyndall 3+, formed anterior chamber. (Source: Clinical history)

The gonioscopy was normal. The eye fundus examination revealed a cloudy vitreous, unable to describe details of the papilla or the macula. The ophthalmological examination of the contralateral eye was normal.

Due to the clinical manifestations, it was decided to perform an anterior segment optical coherence tomography (OCT - SA) of the RE, where the anterior chamber was observed with punctate cellularity, of moderate density (Figure 2).

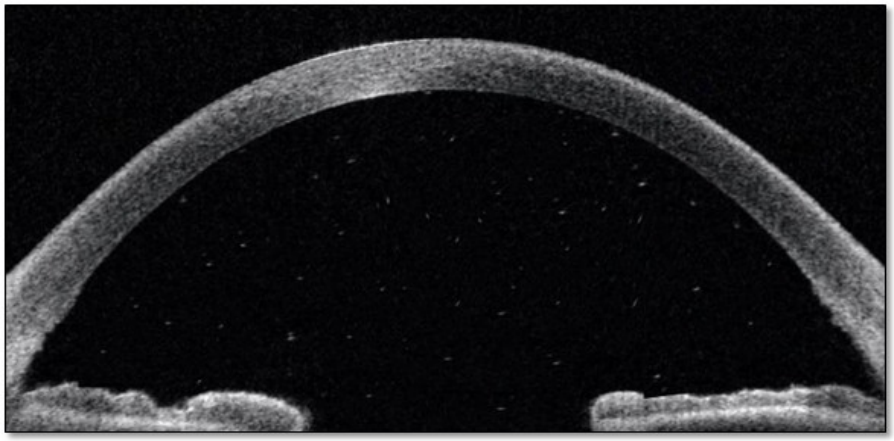

Figure 2. OCT-SA of the RE. Presence of punctate cellularity of moderate density in the anterior chamber. (Source: Clinical history)

Subsequently, a B-mode ultrasound of the RE is performed, where a diffuse increase in echogenicity is evident, compatible with vitreous hemorrhage; the retina was applied in the four quadrants (Figure 3).

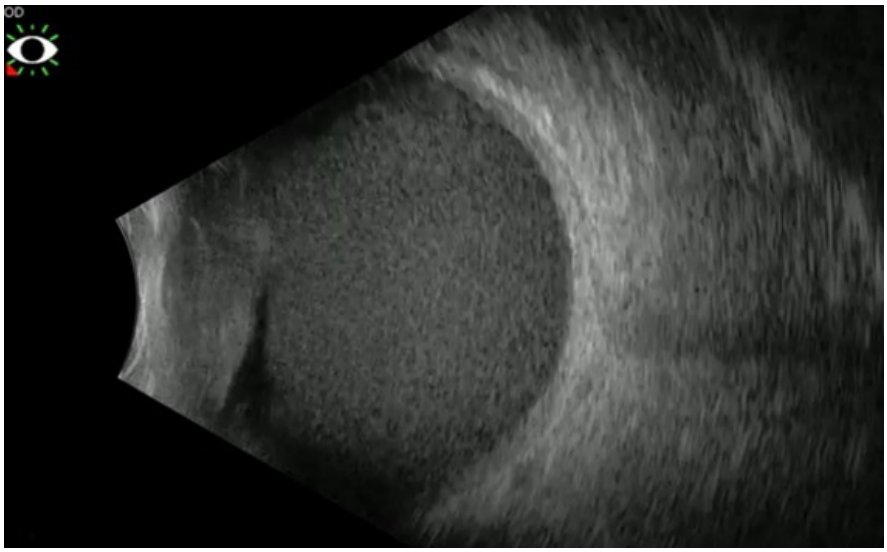

Figure 3. B-mode ultrasound of the RE. Diffuse increase in echogenicity, consistent with vitreous hemorrhage. (Source: Clinical History)

Paracentesis is performed to obtain a sample of aqueous humor and staining with hematoxylin-eosin is performed, evidencing the presence of spherical erythrocytes with traces of degenerated hemoglobin (Heinz bodies) (Figure 4).

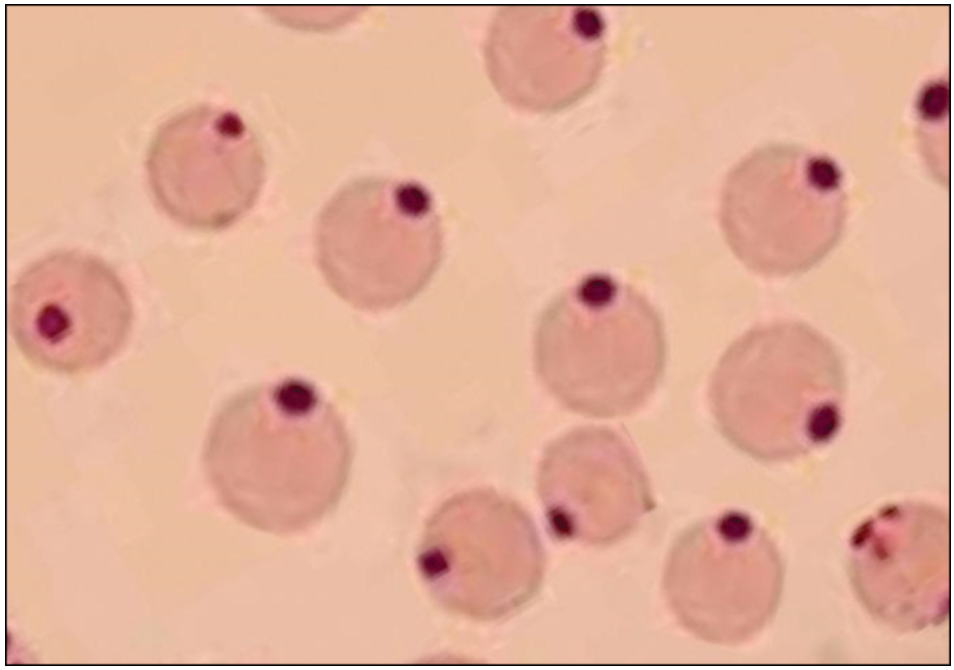

Figure 4. Histology of the aqueous humor of the RE. Presence of Heinz bodies. (Source: Clinical history)

For all of the above, the diagnosis of ghost cell glaucoma (GCF) is made and topical medical treatment is started with Timolol (0.5%) 1 drop every 12 hours, Dorzolamide (2%) 1 drop every 12 hours, Brimonidine (2 %). 1 drop every 8 hours and Acetazolamide 250mg every 8 hours orally. It is reassessed later and persistence of elevated IOP is evident. Due to the evolution of the disease and the refractoriness to medical treatment, it was decided to opt for surgical treatment. In the RE, pars plana vitrectomy + anterior chamber lavage + non-valvular Baerveldt drainage implant was performed. In the postoperative period, IOP remained within normal ranges. Two months after surgical treatment, an IOP of 15 mmHg and a BCVA of 20/70 were obtained, with clinical resolution of the ocular symptoms in the RE.

DISCUSSION

Ghost cell glaucoma (GCF) is a rare form of secondary open-angle glaucoma associated with degenerated erythrocytes (ghost cells), after prolonged vitreous hemorrhage, phantom cells develop in the vitreous and subsequently migrate to the anterior chamber to through the broken anterior hyaloid. As red blood cells degenerate in the vitreous, they change from their typical biconvex shape to khaki spherical ghost cells (erythroclasts). The latter are stiffer than normal erythrocytes and less able to cross the trabecular meshwork[7]. The onset of ghost cell glaucoma is usually 2 to 3 weeks after trauma, as it takes at least 1 to 2 weeks for red blood cells to degenerate into ghost cells.

Glaucoma caused by CF is characterized by ocular pain, prolonged IOP elevation, decreased visual acuity, absence of keratic precipitates, open iridocorneal angle assessed by gonioscopy, presence of fine khaki cells in AC, may also be deposited as Khaki-colored pseudohypopion or on a persistent hyphema secondary to previous ocular trauma, generating a double-layered level of red color for fresh red blood cells, and khaki color corresponding to FC, which is known as the caramel stripe sign [1,8,9].

In the present case there was refractoriness to medical treatment, for which reason surgical management was considered, performing a pars plana vitrectomy + anterior chamber lavage + implantation of a non-valved Baerveldt drainage device. The treatment was successful since IOP control was achieved.

CONCLUSIÓN

GCF is a very rare disease, but it must be considered within the differential diagnosis of traumatic glaucoma. In the present case, the diagnosis was based on high clinical suspicion and histological confirmation.

The GCF usually has a good response to medical treatment, but as observed in the present case, the IOP could not be controlled, for which surgical treatment was required, achieving a good clinical evolution after this.

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