Short communication

Siderosis bulbi. Clinical presentation of a case of three years from onset☆

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ARTICLE INFO

Article history:
Received 6 February 2011
Accepted 11 September 2011
Available online 2 October 2012

Keywords:
Siderosis bulbi
Intraocular foreign body
Toxic retinopathy

ABSTRACT

Case report: The clinical and functional characteristics of a 30 years-old patient with three years-evolution siderosis bulbi are described in this paper, as well as the treatment using phacoemulsification and vitrectomy for the elimination of the metallic remains.

Discussion: In spite of the fact that the majority of the intraocular foreign bodies (IOFB) have a dangerous immediate effect, in cases of small, local bodies and with little visual deterioration, observation is possible. Nevertheless, with time, the iron settles on the pigmented epithelium of the retina, producing changes at macula and peripheral level, which are responsible for the gradual loss of vision. The surgical removal of the IOFB can stop the progression of this pathology.

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Siderosis bulbi. Presentación clínica de un caso de tres años de evolución

RESUMEN

Caso clínico: Se presentan las características clínicas y funcionales de un paciente de 30 años con siderosis bulbi de tres años de evolución, y el tratamiento mediante facoemulsificación y vitrectomía para la eliminación de los restos metálicos.

Discusión: A pesar de que la mayoría de los cuerpos extraños intraoculares (CEIO) tienen un efecto deletéreo inmediato, en casos de cuerpos pequeños, localizados y con poca afectación visual, es posible su observación. Sin embargo, con el tiempo, el hierro se deposita en el epitelio pigmentado de la retina, produciendo cambios a nivel macular y periférico responsables de pérdida progresiva de visión. La cirugía de extracción del CEIO puede frenar la progresión de esta dolencia.

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Introduction

Siderosis bulbi is a potentially threatening visual acuity complication caused by the retention of an intraocular ferrous foreign body (IOFB) which may appear from 18 days up to many years after the impact. Clinical findings include iris heterochromia, midriasis, formation of siderotic cataracts, secondary glaucoma and retina pigment epithelium degeneration. In most cases, early surgical removal of the IOFB is the treatment of choice but in the case of elements considered to be inert such as glass, plastic, gold, silver, platinum and aluminium a conservative attitude can be adopted. The most frequent elements are metals, among these iron, followed by copper (calciosis). Both produce severe intraocular toxic reactions which vary depending on the metal content, the amount of time it remains within the eye and its shape and size.

Case report

Male, 30, of Rumanian origin without relevant personal antecedents, who visited the emergency service referring progressive monolateral vision loss with an evolution of several weeks. The ophthalmological assessment produced a visual acuity in the RE of 1 and of 0.3 in the LE, with normal ocular motility and intraocular pressure in both eyes. The initial biomicroscopy revealed cataracts due to brownish deposits in the anterior capsule of the lens (Fig. 1), while funduscopy exploration showed a clear syneretic vitreous and the presence of an IOFB in the upper nasal equatorial retinal area. An additional anamnesis revealed the history of an impact 3 years ago in the LE which was assessed by ophthalmologists, but at that time the existence of the IOFB was unknown or assessed as non-surgical. The patient exhibited visual field alterations with concentric restriction in the LE (Fig. 2), dotted hypofluorescence areas at the level of the RPE in the peripheral and equatorial retina of the LE in fluorescein angiography (Fig. 3), with signs of macular edema. Electroretinogram (ERG) and electrocogulogram (EOG) exhibited slight alterations, particularly in the EOG (Fig. 4).

Phacoemulsification and intraocular lens implant was performed, during which a peripheral rupture in the upper part of the posterior lens capsule was observed and a slight iridian defect visible at 12 h by means of transillumination (Fig. 1). In the same surgery, 23 G vitrectomy was carried out and the metal, with an overall diameter of 3 mm, was removed with tweezers. Its extraction did not involve any problem except that it fragmented. One of the fragments fell towards the inferior temporal area beyond the liquid perfluorocarbon (PFCL) bubble that had been previously placed in the posterior pole to protect the macula. After increasing the sclerectomy to remove both fragments, laser photocoagulation was performed around both retinal impact areas (Fig. 5) followed by gas injection (C3F8). Three months after the intervention, the patient exhibited a visual acuity of 0.7.

Discussion

A conservative approach in the case of an IOFB can be adopted when it is considered that the foreign body is small and does not cause ocular toxicity or vitreous inflammation that could stimulate a PVR. Together with the presence of an undetected IOFB in the first exploration after traumatism, these constitute the most frequent causes of siderosis bulbi. The management of this condition consists in the early removal of the IOFB which can be performed with electromagnets when it is smaller than 2 mm and is located in the anterior vitreous or preferably with vitrectomy if the foreign bodies are larger and are adhered to the retina, whereas siderotic cataracts should be intervened with phacoemulsification and IOL implant. This intervention achieves good functional results in cases of up to 33 years of evolution. Generally, EOG deteriorates the most and stabilizes after surgery, but the visual field and may exhibited progressive constriction despite the progressive clearing of the iron deposits from the retina. The risk factors involved in the poorest final visual results are delays in removing the IOFB, the presence of hemorrhage or retina detachment prior to surgery, traumatic involvement of the lens and poor initial visual acuity.
Fig. 2 – Ocular fundus with red-free light: macular autofluorescence in right eye and of drusen in both eyes.
Fig. 3 – Fluorescein angiography: hyperfluorescence of drusen and choroidal folds in both eyes without contrast leak although with late capture of right eye subfoveal deposit.

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Fig. 4 – Optic coherence tomography: hyper-refrangent deposit over right eye foveal pigmented epithelium.
Conflict of interest

No conflict of interests has been declared by the authors.

REFERENCES


Fig. 5 – Farnsworth–Munsell 100 color test exhibits nonspecific alterations in the three axes, with 488 errors in the right eye and 396 in the left eye respectively.