ECLIPSE RETINOPATHY: THREE CASES REPORT

RETINOPATÍA POR ECLIPSE. A PROPÓSITO DE TRES CASOS

DRAKE-CASANOVA P1, BOLÍVAR-DE-MIGUEL G2, CASTRO-REBOLLO M2, CLEMENT-CORRAL M2, DAPENA-SEVILLA I2, PAREJA-ESTEBAN J2

ABSTRACT

Case report: We present the evolution of eclipse retinopathy in 3 patients who came to our hospital after the eclipse of October 2005 and had foveal lesions and visual field alterations.

Discussion: Eclipse retinopathy is a maculopathy that occurs after exposure to intense solar radiation, such as occurs during an eclipse, and is produced by a photochemical mechanism. Although the macular changes and symptoms are usually reversible, residual defects at the level of the EPR and scotoma in visual fields can occur. For these reasons the most appropriate treatment is prevention by means of public awareness campaigns (Arch Soc Esp Oftalmol 2007; 82: 575-578).

Key words: Eclipse retinopathy, foveoretinitis, solar retinopathy, fovea, solar eclipse.

INTRODUCTION

Although it was already described by Galileo (1,2), solar retinopathy is a rare entity consisting of a macular alteration caused by a photochemical mechanism after being exposed to intense solar radiation. The most frequent visual symptoms include altered visual acuity and perception of a central scotoma. Diagnosis is reached via anamnesis and funduscopic examination. It is called foveomacular retinitis when no previous history of solar exposure can be confirmed and the same signs and symptoms appear.

Today, the cases involving solar retinopathy take place during solar eclipses in patients suffering from psychiatric disorders, religious rituals, halluci-

RESUMEN

Casos clínicos: Se presenta la evolución de tres pacientes que acudieron a nuestro hospital tras el eclipse de octubre de 2005 con lesiones foveolares y alteraciones en el campo visual.

Discusión: La retinopatía por eclipse es una maculopatía que acontece tras la exposición a radiaciones solares de forma intensa, como en un eclipse, producida por un mecanismo fotoquímico. Aunque los síntomas y las alteraciones maculares suelen ser reversibles pueden quedar defectos residuales a nivel del EPR y escotomas en el campo visual, por lo que, el mejor tratamiento es la prevención mediante campañas de concienciación pública.

Palabras clave: Retinopatía por eclipse, foveoretinitis, retinopatía solar, fóvea, eclipse solar.
nogenic drug use, military men and woman, astronomers (1,2), although a certain individual susceptibility has been observed (1,2). For instance, individuals at greater risk include patients with transparent means for a greater transmission of radiation, albinos, individuals with a good fixation ability and people residing in geographical areas with high UV-B radiation atmospheric transmission. The use of inadequate protection during the visualization of eclipses also has a deleterious effect (2).

Taking into account that this is a very rare pathology, we decided to study the damage and evolution of patients who had checked in the emergency unit after the solar eclipse of October 3, 2005, described below.

**CASE REPORTS**

Three young (14, 18 and 21 years old) patients (two females and one male) checked in the ER during the first 48 hours following the solar eclipse.

None had a personal relevant history and reported a central scotoma in BE (one patient reports noticing it more in the right eye). Two patients report having looked at the eclipse with no protection for 5 minutes, while the other reports not having looked at it directly.

The best visual acuity was 1, except for the right eye of one patient, which scored 0.7.

The 10-2 VF only showed a marked diffuse alteration at the upper nasal level in the eye registering 0.7 VA, which disappeared 6 months later. The remaining VF were normal.

Funduscopic examination revealed a white-yellowish lesion at the foveolar level (figs. 1-4), which disappeared in both patients 6 months later, while other pigment changes at the macular level persisted (figs. 5 and 6).

The three patients report that symptoms disappeared in 1 to 4 weeks.

**DISCUSSION**

Once the threshold for retinal damage has been surpassed (some authors place it around 90 seconds of exposure) (1), short-wave lights (4) release free radicals that damage photoreceptors by means of a photochemical mechanism. Other mechanisms have also been described to explain the physiopathology of solar retinopathy: acoustic and thermal mechanisms (due to the absorption of light energy by the melamine found in the retinal pigment epithelium (RPE), which increases the temperature of the surrounding tissue) (3). The light present during eclipses leads to significant cellular changes (as some studies point out, it may even lead to irreversible neuronal apoptosis), greater than those induced in photoreceptors.

The clinical symptoms described in the literature include VA reduction, central scotoma (as in our patients), dyschromatopsia, photophobia and metamorphopsia. Although asymmetrical, involvement is usually bilateral (1,3,5).

According to the references reviewed (1-5), the characteristic funduscopic exploration for solar retinopathy included a reduction in foveolar reflex and a white-yellowish dot in the foveal area (the image observed in our patients), resulting later on in alterations at the RPE level (case number 2) or regular appearance (3) (case reports 1 and 3).

The optic coherence tomography revealed that the RPE’s is the most affected structure, where one
may observe a reduction in temporary reflectivity (3,4).

Most changes observed in this disease are reversible and improve with the passage of time without treatment (2,3), so in view of our patients’ good VA we decided to perform follow-up without treatment. Certain authors have suggested a corticoids treatment for patients whose VA is more affected at the beginning, or anti-inflammatory treatment for the remaining patients (1), although there are no clinical trials in this respect. All authors agree that public awareness and educational campaigns are crucial to avoid looking straight into the sun during eclipses (1,2,5).

REFERENCES