Short communication

Corneal chrysiasis. Gold salt deposits in the cornea in a patient with rheumatoid arthritis. An analysis with confocal microscopy

E. Santos-Bueso⁎, M. Ahmed-Wasfy, F. Sáenz-Francés, J. Gil-de-Bernabé, J.M. Martínez-de-la-Casa, J.M. Benítez-del-Castillo, J. García-Feijoo

Unidad de Neurooftalmología, Hospital Clínico San Carlos, Madrid, Spain

A R T I C L E   I N F O

Article history:
Received 31 May 2012
Accepted 6 September 2012
Available online 4 August 2013

Keywords:
Gold salts
Cornea
Chrysiasis
Microscopy
Confocal

A B S T R A C T

Case report: A 60-year-old woman with rheumatoid arthritis of 20 years onset, on treatment with monthly intramuscular gold salts (GS) for the last 7 years. She complained of suffering from halo vision, and the examination showed a visual acuity of 0.6 in both eyes (BE). The slit lamp showed some deposits in the stroma with scattered golden granulated, without any further inflammatory reaction.

Discussion: GS deposits are dose-dependent and reversible, although very slowly. In this article, we introduce, for the first time, evidence of deposits of GS in all layers of the cornea, predominantly in the corneal stroma and in the endothelium.

© 2012 Sociedad Española de Oftalmología. Published by Elsevier España, S.L. All rights reserved.

Crisis corneal. Depósitos corneales de sales de oro en paciente con artritis reumatoide. Análisis con microscopía confocal

R E S U M E N

Caso clínico: Mujer de 60 años de edad con artritis reumatoide de veinte años de evolución, en tratamiento con sales de oro (SO) intramusculares mensuales en los últimos 7 años. Refería visión de halos y presentaba una agudeza visual de 0,6 en ambos ojos (AO) y en la lámpara de hendidura destacaban depósitos en el estroma central de AO de material granulado dorado disperso y sin reacción inflamatoria. Se realizó estudio con microscopía confocal.

Discusión: Los depósitos de SO son dosis-dependientes y reversibles aunque de forma muy lenta. En este trabajo se presenta por primera vez la evidencia de los depósitos de SO en todas las capas de la córnea, de predominio en el estroma y endotelio corneales.

© 2012 Sociedad Española de Oftalmología. Publicado por Elsevier España, S.L. Todos los derechos reservados.


⁎ Corresponding author.
E-mail address: esbueso@hotmail.com (E. Santos-Bueso).

2173-5794/$ – see front matter © 2012 Sociedad Española de Oftalmología. Published by Elsevier España, S.L. All rights reserved.
Introduction

Sodium aurothiomalate or gold salt (GS) is utilized to induce remission in rheumatoid arthritis (RA) although at present it has been displaced by methotrexate in low dosages as first choice drug.1,2

GS, administered intramuscularly at a maximum dosage of 1 g, can sediment in any bodily organ or system and therefore it is necessary to carry out regular analyses to identify side effects such as kidney, liver or hematopoietic insufficiency. Side effects arise in one-third of patients and could cause treatment suspension in 20% of cases.1,2

This paper presents a case of a patient with RA treated with GS who exhibited corneal deposits of said drug and the results of corneal analysis with confocal microscope.

Case report

A patient, age 60 with RA of 20 years evolution (Fig. 1), in treatment with intramuscular GS (50 mg week the first 6 months and 50 mg per month for the past 7 years), referred with progressively diminishing eyesight in the past few months and the appearance of luminous halos. Visual acuity was of 0.6 in both eyes (BE) and slit lamp examination revealed deposits in the central stroma of BE comprising golden dispersed granular material without inflammatory reaction (Fig. 2). The rest of the anterior pole, intraocular pressure and ocular fundus were normal.

Corneal analysis was performed with confocal microscope (Confoscan model P4. Tomey AG, Erlangen-Tennenlohe, Germany) identifying dispersed shiny granules of homogeneous size and density in all layers of the cornea (Figs. 3–6). The gold deposits were seen as shiny particles in variable shapes and sizes in all corneal layers and with higher density in the stroma (Fig. 5) and endothelium (Fig. 6) compared to the density found in the superficial epithelium (Fig. 3) and sub-basal layer (Fig. 4).

The patient was referred to the Rheumatology Service for examination. It was decided not to carry out genetic study and GS was substituted by methotrexate. After 1, 2 and 3 years the patient remained stable without activity in RA and without changes in the GS deposits homogeneously distributed throughout the corneal layers and maintaining the same density (analyzed with confocal microscope).

Fig. 1 – Symmetrical inflammation and deformities in the proximal inter-phalangeal and metacarpal–phalangeal joints.

Fig. 2 – Deposits in the central stroma of disperse golden granulated material without inflammatory reaction in both eyes.

Fig. 3 – Confocal microscope. Gold salt deposits in the superficial epithelium.
Discussion

Rheumatoid arthritis is considered to be the result of the action of an antigen in an individual with adequate genetic predisposition. It has been demonstrated that the presence of HLA-DR3 is related to the development of renal, cutaneous and hematological toxicity due to GS. In the instant case it was decided not to carry out a genetic study due to the evidence of the clinical condition, the stability of the RA process and the absence of complications derived from GS treatment.

The most frequent adverse ocular reaction of GS is deposits of the drug in the cornea, or corneal chrysiasis, which can occur in up to 40% of patients treated with this drug for long periods of time. The most frequent symptoms referred by patients are diminished vision or perception of luminous or colored halos.

The threshold dosage of GS which gives rise to corneal deposits is not known. When the aggregate GS dosage exceeds clearing capacity, the gold salt deposits in different areas of the body such as the cornea. Corneal GS deposits are dosage-dependent and reversible even though the elimination thereof is a slow process which can take up to 9 years after suspending treatment. Said deposits have been described in the corneal epithelium and stroma and in all corneal layers, predominantly in the anterior stroma, probably due to phagocytosis from the aqueous humor.

This paper presents evidence of GS deposits in all corneal layers and predominantly in the corneal stroma and endothelium.

Conflict of interest

No conflict of interest has been declared by the authors.

References