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## Original article

# Focal choroidal excavation: Clinical findings and complications<sup>☆</sup>



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### ABSTRACT

**Objective:** To describe the clinical findings and its complications in 2 patients with focal choroidal excavation (FCE).

**Methods:** A retrospective case-series including 4 eyes of 2 patients with FCE that underwent a comprehensive ophthalmological examination including slit-lamp examination, color fundus photography, spectral-domain optical coherence tomography (SD-OCT), fluorescein angiography (FA), and indocyanine green angiography.

**Results:** In 2 patients, both the anterior and posterior segment evaluations were mostly normal despite the presence of yellowish spots in the macular area of the right eye of patient 1, and of a small yellowish elevated lesion with serous macular detachment in the macular area of the left eye in patient 2. At diagnosis, SD-OCT revealed a conforming FCE in patient 1, and in patient 2, an FCE with perilesional subretinal fluid and a neuroepithelium detachment, suspicious of FCE complicated with central serous retinopathy (CSCR). At one year of follow-up, patient 1 developed choroidal neovascularisation (CNV) over the focal choroidal excavation. FA and indocyanine green angiography examinations revealed areas with hypofluorescence in earlier frames, and a diffuse leakage in late frames. After ranibizumab injections, the SD-OCT of patient 1 revealed no active exudation, while patient 2 showed partial resolution of subretinal fluid.

**Conclusions:** FCE is a newly described entity of unclear etiology. It is characterized by a choroidal excavation in eyes, with absence of posterior staphyloma, scleral ectasia, trauma, or retinal disease. Although most lesions remain stable, there could be an association with CRSC or CNV.

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## La excavación focal coroidea: hallazgos clínicos y complicaciones

### R E S U M E N

#### Palabras clave:

Excavación focal coroidea  
 Coriorretinopatía serosa central  
 Neovascularización coroidea  
 Tomografía de coherencia óptica de dominio espectral  
 Ranibizumab

**Objetivo:** Describir los hallazgos clínicos y sus complicaciones en dos pacientes con excavación focal coroidea (EFC).

**Métodos:** Serie retrospectiva de casos. Se realizó exploración oftalmológica que incluía examen con lámpara de hendidura, retinografía, tomografía de coherencia óptica de dominio espectral (SD-OCT), angiografía fluoresceíngrafía (AGF) y angiografía con verde de indocianina sobre cuatro ojos de dos pacientes con EFC.

**Resultados:** En ambos pacientes la exploración de polo anterior y posterior resulta prácticamente normal a excepción de, en el paciente 1, la presencia de un moteado amarillento sobre el área macular del ojo derecho y, en el paciente 2, de una lesión amarillenta sobreellevada con desprendimiento seroso en el área macular del ojo izquierdo. En el momento del diagnóstico, la SD-OCT mostraba en el paciente 1 una EFC conformadora y en el paciente 2 una EFC con líquido subretiniano perilesional y un desprendimiento del neuroepitelio, compatible con una EFC complicada con una coriorretinopatía serosa central (CRSC). Al año de seguimiento, el paciente 1 desarrolló una neovascularización coroidea (NVC) sobre el área excavada. La AGF y angiografía con verde de indocianina revelaban áreas de hipofluorescencia temprana con hiperfluorescencia difusa tardía. Después del tratamiento con ranibizumab intravítreo, la SD-OCT del paciente 1 mostraba ausencia de exudación mientras que en el paciente 2 se objetivaba una resolución parcial del líquido subretiniano.

**Conclusiones:** La EFC es una entidad de reciente diagnóstico y etiología desconocida. Se define como un área de excavación coroidea en ausencia de estafiloma posterior, ectasia escleral, trauma o enfermedad retiniana. Aunque la mayoría de las lesiones se mantienen estables, su asociación con una CRSC o NVC puede ocurrir.

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## Introduction

Choroidal excavation was first described in 2006 by Jampol et al.<sup>1</sup> as an unusual anatomical finding in the optic coherence tomography (OCT) of an asymptomatic patient. Only in 2011 Margolis et al. established the term “focal choroidal excavation” (CFE).<sup>2</sup> CFE was initially defined as a submacular choroidal excavation area in the absence of posterior staphyloma, scleral ectasia or previous history of trauma, posterior uveitis or choroidal retinal disease with infectious or vascular etiology. Since its description, improvements in imaging technology have facilitated the study of this entity and its morphological characterization.<sup>3-5</sup> However, the etiology of CFE remains unclear although it has been described in association with diseases such as central serous chorioretinopathy (CSCR), choroidal neovascularization (CNV) or polypoid vasculopathy (PVP).<sup>5-7</sup>

Through the description of 2 clinic cases, the authors aim at explaining the clinical and tomographic expression of CFE, different theories about its etiopathogeny and show the results after 2 years follow-up with the therapeutic options applied in the case of its association with CNV in clinic case 1 or CSCR in clinic case 2.

## Case 1

Caucasian female, 22, without relevant systemic history, who visited the practice for assessing a refractive defect. Best

corrected visual acuity (BCVA) of 20/20 ( $-6.25 [-0.50 \times 159^\circ]$ ), axial length of 23.4 mm in the right eye (RE) and of 20/20 ( $-6.00 [-0.50 \times 170^\circ]$ ), axial length of 23.16 mm in the left eye (LE) in the absence of clinical findings related to pathological myopia such as posterior staphyloma, scleral ectasia or chorioretinal atrophy. Intraocular pressure and anterior segment of both eyes (BE) was normal. RE ocular fundus revealed a small juxtafoveal yellowish lesion having a diameter of 100  $\mu$ . No hemorrhages or exudates were observed. The LE ocular fundus did not present relevant clinical findings. RE OCT was carried out (3D OCT-2000 Spectral Domain Topcon, Topcon Corporation, Oakland, NJ, USA), which revealed a preserved foveal profile without intraretinal fluid or cysts. However, the presence of a second external nuclear layer with external retina depression (external limiting membrane, ellipsoids and retina pigment epithelium [RPE]) was observed (Fig. 1A).

One year later, the patient maintains a BCVA of 20/20 in both eyes. However, the SD-OCT image exhibits significant changes, including the presence of hyper-reflective tissue above the RPE which altered the structure of the external retina, a wedge of adjacent subretinal fluid and progression of the choroidal excavation (Fig. 1B). Suspecting possible choroidal neovascularization, the patient was called for an examination 2 weeks later, with the result of BCVA diminished to 20/40 and SD-OCT showing over the excavation area the presence of a pigment epithelium detachment, destructuring of the external retinal layers and intraretinal cysts compatible with Gass type 2 choroidal neovascularization<sup>8</sup>

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