Optical coherence tomography findings in macular hole complicating exudative age-related macular degeneration treated with ranibizumab

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Abstract

Purpose: To analyze the prevalence and morphometric characteristics of macular hole development in patients with neovascular age-related macular degeneration treated with ranibizumab.

Methods: Patients diagnosed of neovascular age-related macular degeneration from January 2009 to December 2010 have been analyzed. Measurement of visual acuity and optical coherence tomography were scheduled.

Results: Two hundred and thirteen eyes (patients) with exudative age-related macular degeneration were analyzed. Development of macular hole was evidenced in 4 eyes (1.9%)

Discussion: Macular hole formation is a severe complication in patients with choroidal neovascularization treated with ranibizumab, frequently undervalued, which interferes with final outcome.

Keywords: Macular hole, choroidal neovascularization, age-related macular degeneration, Optical Coherence Tomography, Ranibizumab.

INTRODUCTION

Age-related macular degeneration (ARMD) is a leading cause of visual impairment in the elderly, especially the neovascular form of the disease. The development of macular hole (MH) as a spontaneous complication of choroidal neovascularisation (CNV) due to ARMD has been described. Other publications report MH formation after intravitreal injection of ranibizumab and photodynamic therapy for the treatment of exudative ARMD.

Optical coherence tomography (OCT) imaging has made possible

Figure 1: An 83 year-old woman was diagnosed of occult choroidal neovascularisation (CNV) in her left eye. In OCT cross sectional images we observed CNV type 2 with intraretinal cysts in the overlying retina. Posterior hyaloid was detached with the presence of an operculum over the fovea. After 11 month follow-up and 6 intravitreal injections OCT image demonstrated foveal lamellar MH with persistence of the operculum over the fovea.
to analyze the anatomical evolution of CNV in ARMD and MH.

The aim of the present study was to analyze the prevalence and OCT characteristics of MH in patients diagnosed of CNV secondary to ARMD treated with ranibizumab.

**MATERIAL AND METHODS**

OCT images from patients diagnosed with exudative ARMD and treated with 0.5 mg/0.05 mL of intravitreal ranibizumab (Lucentis, Genentech Inc., San Francisco, CA) in the Macula Unit of the University and Polytechnic Hospital La Fe (Valencia, Spain) from January 2009 to December 2010 were analyzed. A qualitative analysis was performed with special attention to: type of MH (full-thickness or lamellar) and status of the posterior hyaloid (attached or detached).

**RESULTS**

Two-hundred and thirteen eyes (213 patients; 93 men and 120 women; mean age of 67.3 years [range 59-83]) were included in the present study. After a mean follow up of 16 months (range: 10–18), we found 4 cases (1.9% of patients) of MH development (Figure 1). In two of four cases full-thickness MH was present (Figure 2), and two of four cases showed detachment of the posterior hyaloid.

**DISCUSSION**

Development of idiopathic MH is usually related to anterior-posterior traction from the vitreous on the fovea causing a retinal operculum when the posterior hyaloid detaches from the fovea. Another less frequent cause of MH is the formation of traumatic macular holes, whose pathogenesis is more uncertain; it may be the result of a break in the foveal inner retina and a cyst formation extending laterally to the outer retinal tissue. In the cases we report, the development of MH associated with CNV in patients with ARMD could be explained by several mechanisms.

In conclusion, MH formation is a sight-threatening complication in patients with CNV treated with ranibizumab, which is commonly underestimated. Its multifactorial nature hinders the knowledge of the exact mechanism of its development. New studies with larger number of patients and longer follow-up are warranted to explain the pathogenesis of MH in patients with CNV secondary to ARMD and its influence on final visual prognosis.

**REFERENCES**