Normal fluence photodynamic therapy associated with lamellar macular holes in exudative age related macular degeneration.

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ABSTRACT.
This case series report aimed to describe lamellar macular holes associated with the use of normal fluence photodynamic therapy.

Key words: Age related macular degeneration; macular holes; photodynamic therapy.

INTRODUCTION
Exudative age related macular degeneration (ARMD), vitreoretinal traction, (VRT) normal fluence photodynamic therapy (PDT) and lamellar macular holes (LMH) may be associated findings.1-4 Lamellar macular holes, found at first by pathology4-6, are currently recognized with optical coherence tomography (OCT)7,8, technique also suitable for differential diagnosis, documentation and etiological associations.9,10 Lamellar holes after photodynamic therapy were clinically reported by Mansour and Chung11,12, found in pathology specimens by Gnazi, Stanga and Scupola in cases of exudative ARMD managed with normal fluence PDT.13-15 The present three case report was made possible with optical coherent tomography during follow-up of long standing cases of neovascular exudative age related macular degeneration treated initially with normal fluence PDT.2,3,16-19

CASE SERIES REPORT
Case 1: Seventy year-old male seen in 2003 with BCVA 20/200 in the right eye in association with PVD, a subfoveal predominantly classic choroidal neovascular membrane of ARDM, exudation and hemorrhage (Figure 1A). Patient received a normal fluence PDT that improved vision to 20/80, repeated 4 months after and two years later due to recurrent macular disease that ended in a cicatricial disciform scar with 20/320 visual acuity (Figure 1B). Patient remained stable in 2009 when a TD-OCT3 found a lamellar macular hole, decreased thickness of macular neuroepithelium and photoreceptor layer, intraretinal diffuse edema and a yuxtafoveal fibrovascular separation (Figure 1C).
SDOCT on July 2011 confirmed findings and a normal medium thickness optic nerve fiber layer (ONF) (Figure 1D). Fluorescein angiography revealed geographic atrophy with faint central staining in late stages (Figure 1E) and typical autofluorescence. Last BCVA in the right eye was 20/320 in 2012 with senile lens changes.

Case 2: Is the same patient contralateral left eye also affected with exudative ARMD since year 2000. BCVA LE was 20/40, decreasing one month later to 20/200 due to macular hemorrhage associated with occult type choroidal neovascularization found on fluorescein angiography (Figure 2A) and causing a central scotomata. Patient received a normal fluence PDT application, repeated 4 months later, vision remaining 20/200 and improving two years later to 20/120. Patient returned seven years later, fluorescein angiography revealed hyperfluorescent macular disciform scar and geographic atrophy with typical autofluorescence (Figure 2B). TD and SD-OCT (Figure 2C) found a macular epiretinal membrane, diminished foveal neuro-epithelium thickness, a normal medium thickness ONF, micro cysts around lamellar macular hole, fibrovascular separation, 0.6mm disk cupping. These findings were unchanged in a 2012 SD OCT (Figure 2C) and BCVA 20/120 through moderate lens changes.

Case 3: In 1996, a seventy two years old male had performed elsewhere a bilateral ECCE with PC IOL implant and a subsequently a Nd yag laser capsulotomy in both eyes. The right eye regained BCVA 20/20 but three years later he developed early ARMD changes (Figure 3A), Patient was first seen in the office in 2001 with 20/400 vision due to a subfoveal choroidal neovascular membrane, predominantly classic (Figure 3B), treated before elsewhere with only one normal fluence PDT application. Patient returned in 2010 with a disciform macular scar in the right eye (Figure 3C) and TD- OCT3 found a lamellar macular hole associated with subfoveal fibrovascular proliferation (Figure 4C) revealing in TD - OCT a lamellar macular...
hole associated with subfoveal fibrovascular separation (Figure 4D). Disk cupping 0.6 mm, normal thickness ONF and visual field changes required anti glaucomatous topical treatment.

RESULTS

In summary, four eyes of two patients with exudative ARMD presented a lamellar macular hole. Subfoveal neovascularization was classic in three eyes, one occult, all recurrent. Two eyes of the first patient were phakic and two eyes of second patient were pseudophakic and received Nd: Yag laser posterior capsulotomy. Three eyes received normal fluence PDT sessions: one eye, three sessions, another two session and remaining eye, one session. The contralateral eye in the second patient did not receive PDT but a Nd-yag laser posterior capsulotomy and still developed a lamellar hole.9,10 Three of four eyes showed macular epiretinal membranes following PVD, three eyes had decreased thickness of the macular neuroepithelium and two eyes of the second patient had increased optic disk cupping already receiving antiglaucomatous medication.26 Visual acuity in all eyes ended under 20/200 level.

DISCUSSION

Lamellar macular holes have been found in four eyes with exudative age related macular degeneration. Three of four eyes were treated with an irregular administration of normal fluence photodynamic therapy and two pseudophakic eyes received Nd Yag laser capsulotomy. Pathophysiology of lamellar macular holes, herewith reported, is not unique but a combination of several mechanisms probably associated.19-22 These mechanisms should include trauma from phaco surgery, yag laser capsulotomy and normal fluence PDT in exudative ARMD. Possibly, a contributing contractile vitreo-retinal traction may follow during the healing cicatricial complex process of a mixed degenerative, inflammatory, neovascular, hemorrhagic and exudative disease. Regarding management, prevention becomes important, with an early and proper diagnosis of ARMD using OCT and fluorescein angiography. Based on observations, and results, a good advised is to decrease flow and dosage of PDT in the treatment of ARMD, the use of antiangiogenics or combined therapies16-18 not devoid of complications. Visual results depend on the normal continuity of the external limiting membrane in the ellipsoid zone25 that could be preserved if patients do not reach the cicatricial stage.

CONCLUSIONS

Lamellar macular holes may be observed during follow up of wet-ARMD treated with normal fluence PDT which requires early diagnosis and proper management specially prevention using low fluence FDT alone or a combination therapy with antiangiogenics in precise indications to prevent associated implications.
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REFERENCES


