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**SHORT COMMUNICATION**

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# Photodynamic therapy in retinal angiomatous proliferation stage I

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**PURPOSE.** To report a case of photodynamic therapy (PDT) treatment in an 85-year-old patient with retinal angiomatous proliferation (RAP) stage I.

**METHODS.** According to Treatment of Age-Related Macular Degeneration with Photodynamic Therapy and Verteporfin in Photodynamic Therapy study guidelines, two sessions of PDT with verteporfin were performed, which was activated by a diode laser light at 690 nm.

**RESULTS.** The left eye was treated with PDT because of RAP stage I. Even in the early stage of RAP, PDT treatment did not alter the natural course of the disease. In particular, the lesion evolved towards stage III, being initially in stage I, with the final result of development of retinal pigment epithelial (RPE) tear after the second session of PDT treatment.

**CONCLUSIONS.** Even in the early stage of RAP, PDT treatment did not alter the natural course of the disease, with the final result of RPE tear after the second session of PDT treatment. (*Eur J Ophthalmol* 2006; 16: 326-9)

**Key Words.** Photodynamic therapy, Retinal angiomatous proliferation

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## INTRODUCTION

Retinal angiomatous proliferation (RAP) is a distinct subgroup of wet age-related macular degeneration (ARMD), being intraretinal (1).

For the last 5 years, verteporfin photodynamic therapy (PDT) has provided significant improvement in treatment of sub- or juxtafoveal choroidal neovascularization (CNV) (2, 3).

We report an 85-year-old man with RAP. In particular, the lesion evolved towards stage III, being initially in stage I, with the final result of development of retinal pigment epithelial (RPE) tear after the second session of PDT treatment.

## Case report

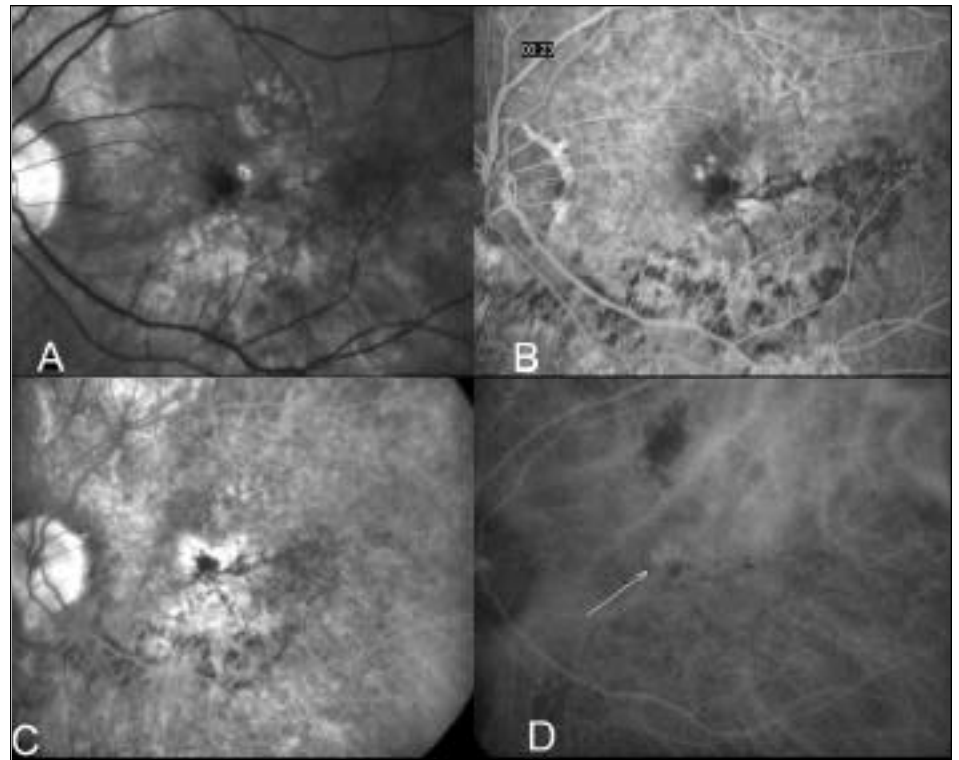
An 85-year-old man, a nonsmoker, was referred to us complaining of decreased vision in his left eye (LE). His

best-corrected visual acuity (BCVA) was 20/30 in the right eye (RE) and 20/80 in the LE. Clinical examination with slit-lamp biomicroscopy and the Goldmann contact lens revealed dot intraretinal juxtafoveal hemorrhages with intraretinal edema in the left macular area. In the right macula there were multiple confluent soft drusen. The Winstation XP Ophthalmic Imaging System with the Canon CF 60 UVI fundus camera was used to perform fluorescein and indocyanine green angiography.

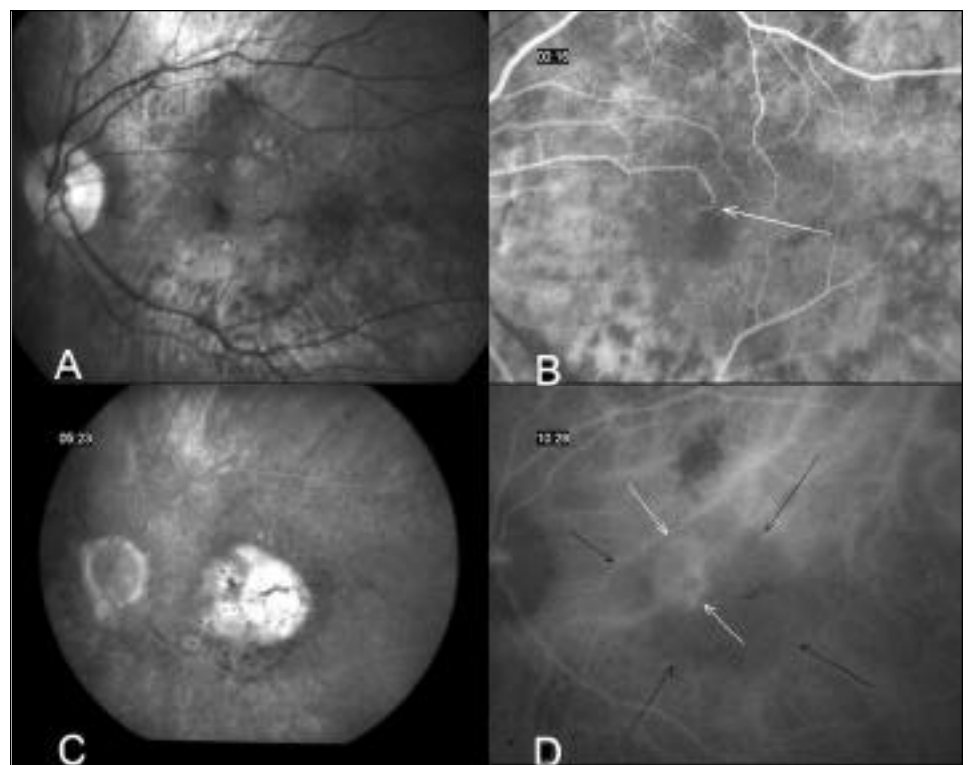
Fluorescein angiography (FA) showed from the early phases two small juxtafoveal areas of leakage of the dye with the hyperfluorescence increasing in size and intensity in late phases (Fig. 1, A-C). Indocyanine green (ICG) confirmed these findings, showing two juxtafoveal hot spots (Fig. 1D).

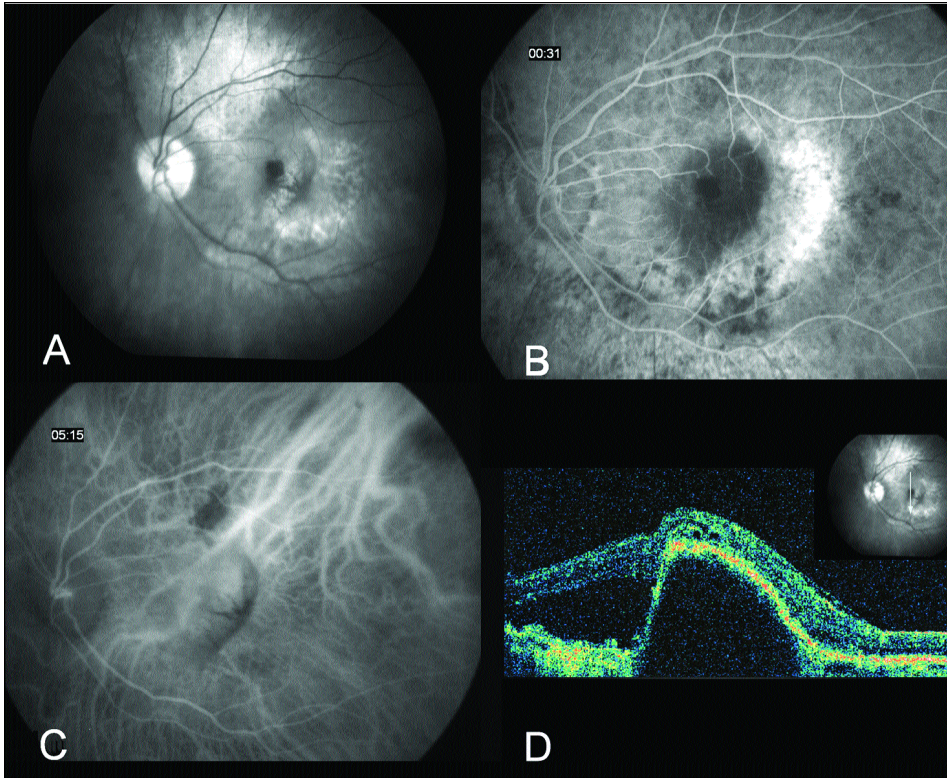
Both clinical and angiographic findings led to the conclusion that the picture was characteristic for RAP stage I. The patient was advised of the risks and benefits of ICG-

**Fig. 1 - (A)** Red-free picture of the left eye showing dot intraretinal hemorrhages. **(B)** Early phase of the fluorescein angiography (FA) showing two small juxtafoveal areas of leakage of the dye. **(C)** Late phase of the FA showing these areas of leakage increasing in size and intensity. **(D)** Indocyanine green (mid phase) showing two juxtafoveal hot spots (white arrow).



**Fig. 2 - (A)** Red-free picture of the left eye 3 months after the first session of photodynamic therapy. **(B)** Early phase of fluorescein angiography (FA) showing a right-angle retinal vessel revealing a retinochoroidal anastomosis (white arrow). **(C)** Late phase of FA revealing a large pigment epithelium detachment (PED). **(D)** Indocyanine green (mid phase) showing the hypofluorescence of the PED (black arrows) with the hyperfluorescence of the choroidal neovascularization (hot spot) (white arrows).





**Fig. 3 - (A)** Red-free picture of the left eye 1 month after the second session of photodynamic therapy. **(B)** Early phase of fluorescein angiography revealing the retinal pigment epithelial (RPE) tear. **(C)** Indocyanine green also revealing the RPE tear. **(D)** Vertical section of left macula with the optical coherence tomography confirming the finding of the RPE tear.

guided argon green laser and FA-guided PDT. The patient chose and underwent PDT treatment according to Treatment of Age-Related Macular Degeneration with Photodynamic Therapy and Verteporfin in Photodynamic Therapy studies.

At his follow-up appointment, 3 months post-PDT treatment, the BCVA in his LE was decreased to 20/200 and fundus biomicroscopy revealed a large pigment epithelium detachment extending all over the macula area (2943  $\mu\text{m}$  in greatest linear dimension) with more intraretinal hemorrhages. In particular, ICG angiography showed the hypofluorescence of the pigment epithelial detachment (PED) with the hyperfluorescence of the subretinal neovascularization (SRN) (hot spot = 1150  $\mu\text{m}$  in greatest linear dimension) increasing in size in later phases (Fig. 2D).

According to the clinical and angiographic findings identification of RAP stage III was confirmed and a second session of PDT covering the whole PED area was performed on the patient.

On re-examination 1 month post-PDT, the BCVA of the LE was decreased further to 20/800 and digital FA and ICG angiography revealed the formation of a RPE tear (Fig. 3, A-C). The latter was confirmed by OCT (Fig. 3D).

## DISCUSSION

According to the literature, RAP is a distinct subgroup of neovascular ARMD (1). It may be present in three vasogenic stages: intraretinal, subretinal, and choroidal neovascularization.

ICG is decisive for the diagnosis and documentation of the advanced stages of RAP while fundus biomicroscopy is helpful in revealing the first intraretinal stage.

Our case concerns a case of unsuccessful PDT treatment in an 85-year-old man with RAP. In particular, the lesion evolved towards stage III, being initially in stage I, with the final result of the development of an acute RPE tear. PDT treatment proved unsuccessful on this patient even in the early stage of RAP and did not alter the natural course of the disease. The second session of PDT had similar disappointing results to other reports (4) with PED exceeding 50% of the entire lesion. Recently, Boscia et al (4) reported that PDT might prove beneficial with RAP and small PED, whereas it might cause acute RPE tear for RAP with PED exceeding 50% of the lesion.

Yannuzzi et al (1) have reported the benefit of focal laser treatment, whereas a more advanced stage involving a

vascularized PED and an retinochoroidal anastomosis is not likely to respond to any form of available treatment.

Similar disappointing results with RPE tears and macular scarring after transpupillary thermotherapy in RAP stage III have been reported by other authors (5, 6) in case series. In particular, only RAP cases in comparison to ARMD cases showed the above mentioned complications despite the use of the same treatment parameters in both groups.

However, a tear of the RPE is a common complication of a PED in the elderly, either occurring spontaneously or after laser photocoagulation, with the neovascularization having an instrumental role in the pathogenesis of the RPE tear (7).

In conclusion, RAP is a distinct subgroup of exudative ARMD and it may have its own clinical course and prog-

nostic factors that differ from other forms of neovascular ARMD originating from the choroid. In this case of RAP, stage I PDT treatment did not alter the natural course of the disease and the lesion evolved towards stage III with the final result of development of RPE tear after the second session of PDT treatment.

A prospective study with a large series of patients and controls may be necessary in order to determine if PDT or a combination of therapies are beneficial for this exudative maculopathy.

*The authors have proprietary interest in any aspect of this article.*

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