

Retinal Capillary Hemangioma Treated with Verteporfin Photodynamic Therapy

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We report on a patient with extracapillary retinal capillary hemangioma who was treated successfully with photodynamic therapy. A 25-year-old patient presented with decreased vision secondary to a solitary peripheral retinal capillary hemangioma and associated subretinal fluid exudation with a collection of hard exudates in the hemangioma area. The patient was treated with photodynamic therapy, which produced favorable results including improved visual acuity (from counting fingers to 6/60) and reduced subretinal fluid accumulation in the affected eye. Photodynamic therapy is a useful and alternative option for treating extrapapillary retinal capillary hemangioma.

Key words: retinal capillary hemangioma, photodynamic therapy

INTRODUCTION

Retinal capillary hemangioma is a highly vascular, well-circumscribed neoplasm of particular relevance to the ophthalmologist because of the frequent manifestation of von Hippel–Lindau disease and the potential of subsequent retinal lesions that can threaten vision. Photodynamic therapy is a noninvasive laser treatment used to achieve selective vascular occlusion without damaging adjacent structures. We report on a patient with extrapapillary retinal capillary hemangioma whom we treated successfully with photodynamic therapy (PDT).

CASE REPORT

A 25-year-old patient presented with decreased vision secondary to a solitary peripheral retinal capillary hemangioma (RCH) before undergoing photodynamic therapy (PDT) to control the hemangioma. He presented with decreased vision and metamorphopsia of one-year duration in his right eye. At the initial examination, his best-corrected visual acuity in the right eye was counting fingers (20 cm in front the eye). Examination of the fundus showed a circumscribed reddish RCH (about 4×4 mm) with a dilated, tortuous feeding vessel at the superotemporal

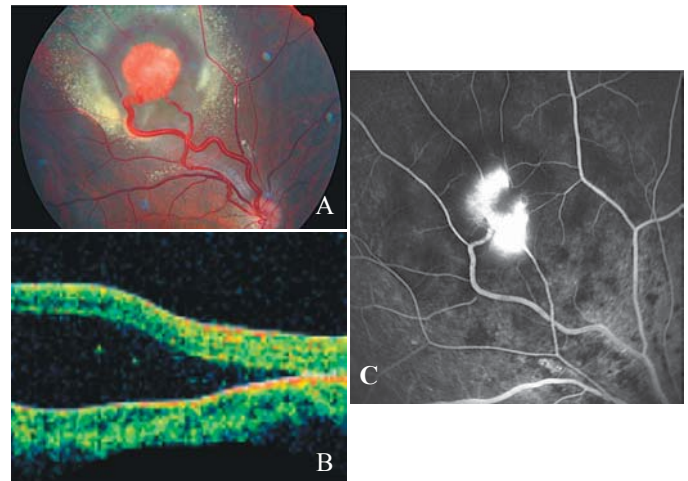


Fig. 1 (A) Fundus photography shows an extracapillary superotemporal capillary hemangioma approximately 4×4 mm with associated exudative retinal detachment and circinate macular exudation. (B) Fluorescein angiography shows capillary leakage. (C) Optical coherence tomography shows exudative retinal detachment.

periphery. Subretinal fluid and exudation with a collection of hard exudates in the hemangioma area were also observed (Fig. 1A). Fluorescein angiography showed the early filling of one retinal feeder and one draining vessel, and late leakage of the hemangioma (Fig. 1B). Optical coherence tomography through the hemangioma showed that the exudation caused retinal elevation in the temporal neurosensory retina (Fig. 1C). The results of a systemic survey, including the measurement of urinary catecholamine excretion, magnetic resonance imaging of the brain

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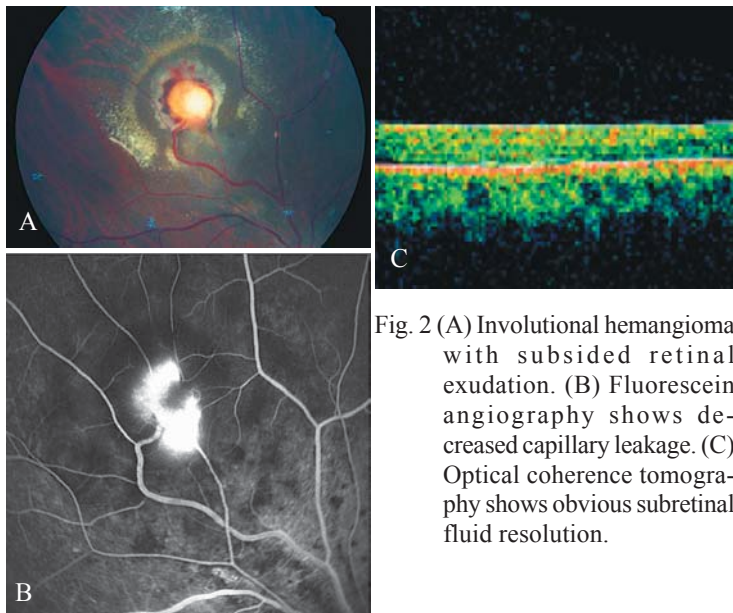


Fig. 2 (A) Involutional hemangioma with subsided retinal exudation. (B) Fluorescein angiography shows decreased capillary leakage. (C) Optical coherence tomography shows obvious subretinal fluid resolution.

and spinal cord, and abdominal computed tomography, were unremarkable. He had no family history of von Hippel–Lindau disease. PDT was performed initially using benzoporphyrin-MA (Visudyne; Novartis AG, Bulach, Switzerland) as the sensitizer administered at a dose of 6 mg/m² body surface area. Laser light at a wavelength of 689 nm was delivered initially to the patient 15 minutes after the infusion of the drug. The light dose of 50 J/cm² was administered at 83-second intervals at an intensity of 600 mW/cm², five times in one session. Four months after treatment, whitening and contraction of the lesion, and narrowing of the feeder and draining vessels were observed (Fig. 2A). Fluorescein angiography demonstrated hypoperfusion of the RCH (Fig. 2B). The patient's best-corrected visual acuity of the right eye improved to 6/60, and significant absorption of the subretinal fluid was apparent on optical coherence tomography (Fig. 2C).

DISCUSSION

The treatment of RCH can be challenging. A variety of techniques have been used to treat RCH, including laser photocoagulation, transpupillary thermotherapy, cryotherapy, PDT, radiotherapy, and surgery¹. Recently, PDT using benzoporphyrin derivatives to occlude the subretinal neovascular membrane has been tested and shown to be effective. Unlike other treatments, PDT has characteristics appropriate for the treatment of a selectively targeted lesion, thereby sparing the normal choriocapillary and retina. PDT has beneficial therapeutic

effects in terms of shrinkage and fibrosis of the hemangioma and resolution of the accompanying subretinal fluid. The aim of PDT is to alleviate subretinal neovascular tissue without compromising the retina, retinal pigment epithelium, or choroid. In PDT, a nontoxic photosensitive drug is administered intravenously and activated at the target region with laser beams that have no thermal effect. Activation of the inactive substance at the target region produces free radicals and other cytotoxic substances, which, in turn, lead to localized clot formation in the neovascular vessels and closure of the subretinal neovascular tissue. The mechanism is thought to involve vasoocclusive and remodeling effects². PDT effectively occludes the papillary and extrapapillary RCH^{2,3,4}. We offered the patient the option of PDT because of the risk of hemorrhage and proliferative vitreoretinopathy associated with cryopexy and the limitations of laser photocoagulation, transpupillary thermotherapy, brachytherapy, and surgery in treating a large hemangioma with exudative retinal detachment^{1,2,5}.

Although complete closure of the RCH was not achieved in our patient, marked involution of the hemangioma, resolution of the subretinal fluid, and clinical improvement were observed after PDT. In previous reports, the PDT was performed under the commonly used protocol of 50 J/cm² light dose, 83 seconds duration, and 600 mW/cm² intensity once in each session. We performed PDT using similar light dose (50 J/cm²), duration (83 seconds), and intensity (600 mW/cm²) five times in one session, and we found no apparent complications. Our method seems to be more time and cost effective.

Although PDT appears to be the most effective method for treating a large peripheral retinal capillary hemangioma with exudative retinal detachment, further follow-up of similar cases is required to assess both the advantages and adverse effects of PDT.

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