
SHORT COMMUNICATION

Case report

Choroidal hemangioma treated with photodynamic therapy using verteporfin: Report of a case

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PURPOSE. *To report the results of treatment of circumscribed choroidal hemangioma with a single application of photodynamic therapy (PDT) with verteporfin according to the Treatment of Age-related Macular Degeneration with Photodynamic Therapy study.*

METHODS. *A 44-year-old man with unilateral decreased vision and macular subretinal fluid secondary to a circumscribed choroidal hemangioma diagnosed by fluorescein and indocyanine green angiography and ultrasonography underwent PDT with verteporfin therapy.*

RESULTS. *One year after PDT, subretinal fluid was absent and visual acuity improved.*

CONCLUSIONS. *The results obtained in this case are in keeping with previously reported results; however, future randomized studies are necessary to evaluate and standardize different infusion times in order to obtain maximum efficacy of treatment. (Eur J Ophthalmol 2003; 13: 656-61)*

KEY WORDS. *Choroidal hemangioma, Photodynamic therapy, Verteporfin*

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Case report

A 44-year-old man was referred to our center with a 1-month history of blurred vision. On examination, visual acuity was 20/64 in the right eye and 20/20 in the left. Fundus examination of the right eye revealed a pink choroidal tumor centered inferonasally to the center of the macula, with a thin layer of subretinal fluid through the macula (Fig. 1). B-scan ultrasonography revealed a tumor height of 1 mm and standardized A-scan ultrasonography revealed high internal reflectivity (Fig. 2). Fluorescein angiography (FA) and indocyanine green angiography (ICG) angiography revealed intense leakage, and subsequent washout of the lesion in the late phase of the ICG examination (Fig. 3).

Choroidal hemangioma was diagnosed and after obtaining informed consent, photodynamic therapy (PDT) was performed. The patient received verteporfin (Visudyne; Novartis Ophthalmics, Hettlingen, Switzerland) intravenously at a drug dose of 6 mg/m² body surface area over 10 minutes. The laser beam was applied 5 minutes after stopping the infusion. PDT was conducted using a diode laser emitting light at 689 nm for photosensitization (Visulas II, Zeiss, Jena, Germany); 50 J/cm² were delivered at an irradiance of 600 mW/cm² over 83 seconds. The size of the treatment spot was calculated based on the largest linear dimension of the choroidal hemangioma and only one spot was applied. One week later, visual acuity was 20/30 in the right eye and exudation

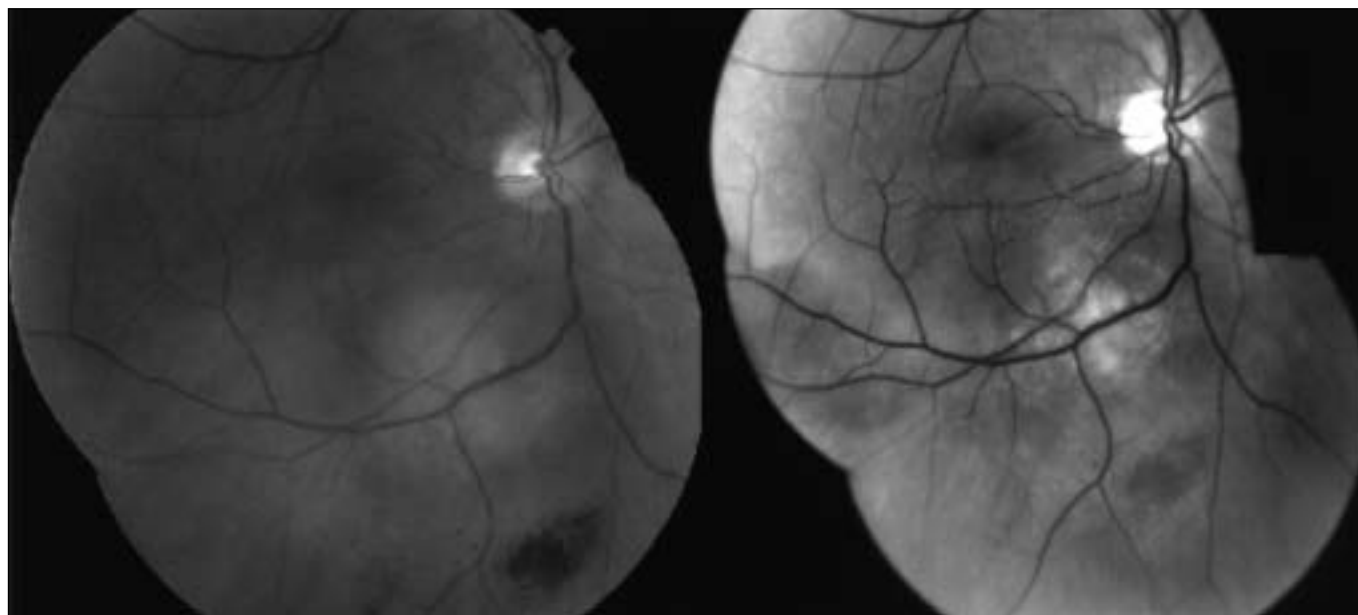


Fig. 1 - Color and red-free photograph shows a choroidal tumor with associated subretinal fluid.

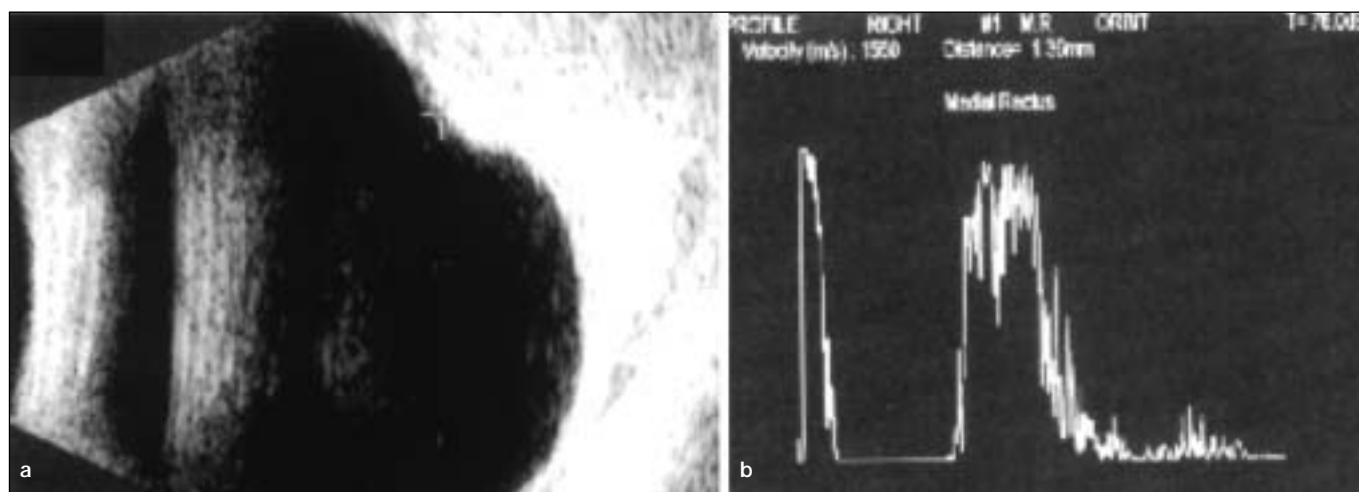


Fig. 2 - Ultrasonography shows a 1-mm-high lesion a) with high internal reflectivity b).

was completely resolved with few subretinal lipid deposits. FA and ICG revealed in the early phase a spoty choroidal occlusion with reduction of the leakage in the late phase of the FA (Fig. 4). Six months later, visual acuity was 20/20 in the right eye, there was no evidence of subretinal fluid, and the tumor regressed to a nonmeasurable thickness, although FA and ICG showed persistence of the lesion. At the 1-year follow-up visit, visual acuity was still 20/20 and there was no evidence of recurrent subretinal fluid.

DISCUSSION

Circumscribed choroidal hemangiomas are generally composed of thin-walled vessels lined by endothelial cells without evidence of proliferation. Associated vision loss is due to leakage and accumulation of fluid in the macula, which remains the only indication for treatment. Theoretically, treatment should be able to reach the tumor vasculature, which is located deep in the retinal pigment epithelium-Bruch membrane-

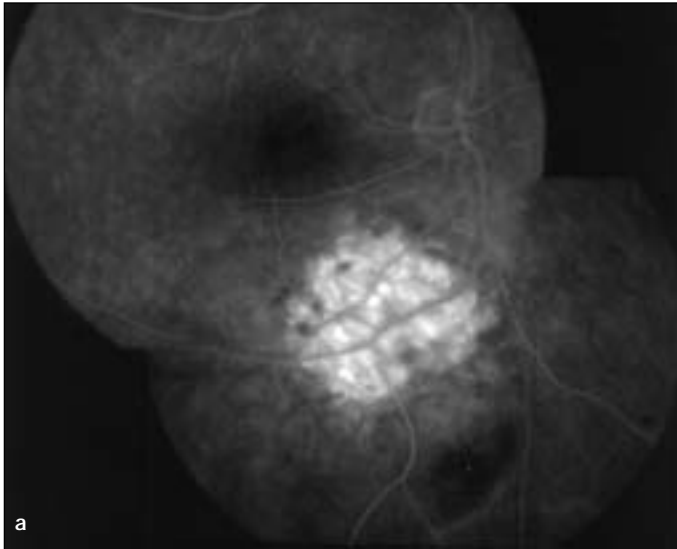
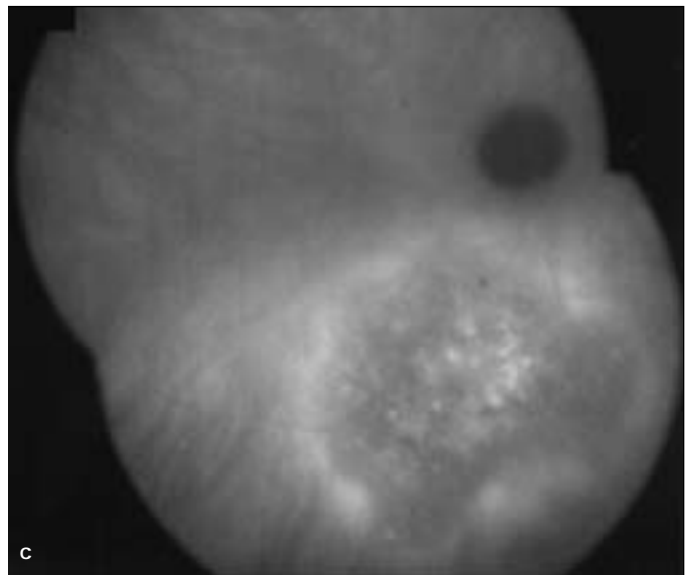
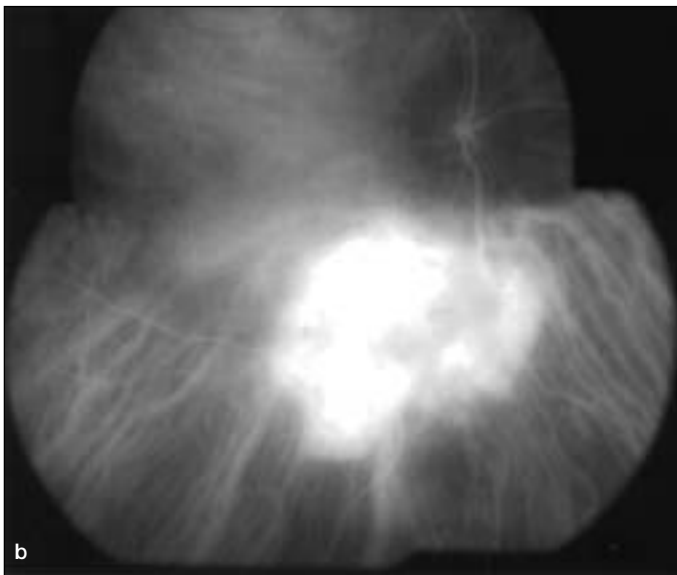


Fig. 3 - Fluorescein angiography shows staining of the lesion in the late phase **a)**. Indocyanine green angiography shows intense leakage in the early phase **b)** followed by washout **c)**.



choriocapillaris complex, and to be safe from adverse reactions (1-6). Numerous treatments (that is, scatter photocoagulation, brachytherapy, low dose external beam irradiation, proton beam irradiation, transpupillary thermotherapy (TTT), and hyperthermia) are available (7-18). However, in the long term, approximately 50% of the patients will have a visual acuity of 20/200 or worse, particularly due to chronic macular edema (7).

PDT with verteporfin has been shown to be effective in the treatment of choroidal neovascularization in age-related macular degeneration, myopia, presumed ocular histoplasmosis syndrome, and idiopathic caus-

es (19-21). Selective occlusion of the choroidal neovascularization can be achieved while the neurosensory retinal layers and Bruch membrane are almost unaffected, leaving retinal function constant (22). PDT should therefore represent almost an ideal treatment for a subretinal vascularized and exudative lesion such as choroidal hemangioma.

Compared with other forms of treatment, PDT has important advantages. Unlike argon laser scatter coagulation, PDT is a safe, rapid, and easily performed outpatient procedure, independent of the patient's age, and is available in almost every department for retinal

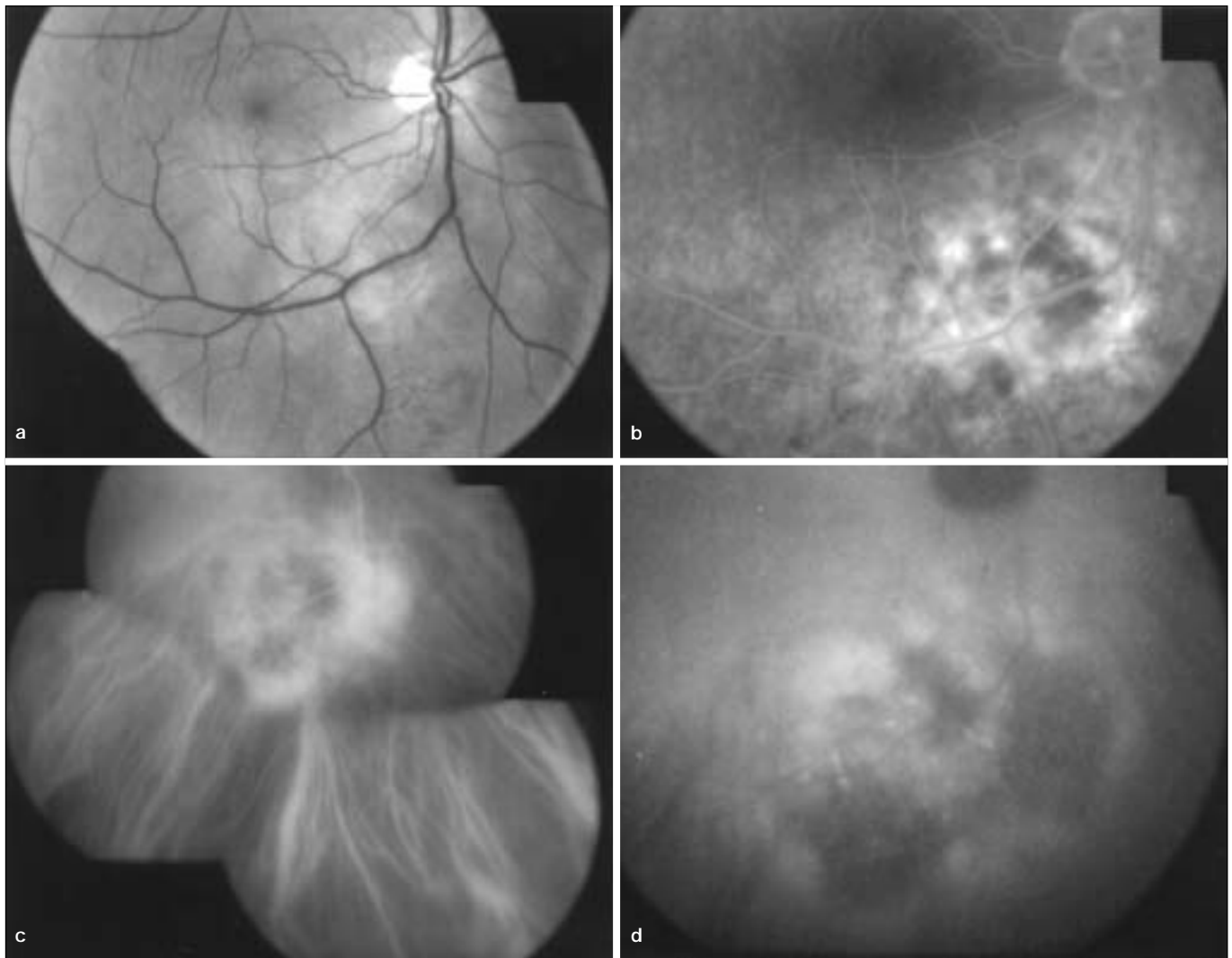


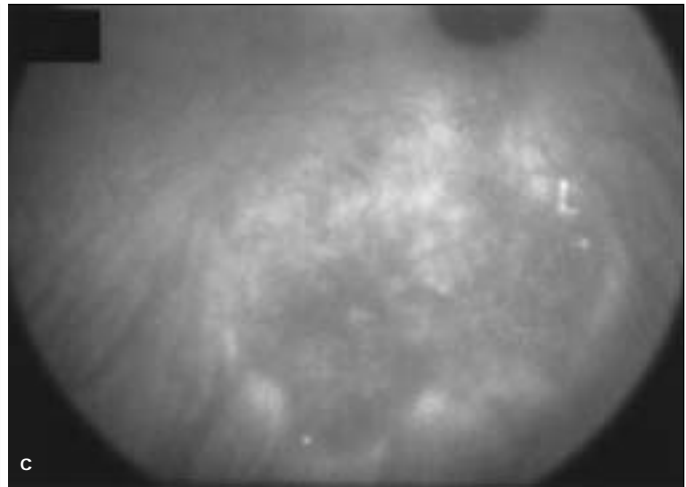
Fig. 4 - One week after photodynamic therapy. Red-free photograph shows no evidence of subretinal fluid with few residual lipid deposits **a, b, c**); fluorescein angiography and indocyanine green angiography show spotty choroidal occlusion, followed by unchanged washout in the late phase **d**).

diseases. Radiation therapy is effective in the treatment of choroidal hemangiomas (12). In contrast with PDT, brachytherapy and proton beam therapy require an operative procedure, and are usually only available in specialized centers. TTT has been demonstrated to effectively penetrate deep in elevated tumor, such as small choroidal hemangiomas and melanomas. However, TTT may induce chorioretinal atrophy (17) as a consequence of the thermal effect, a matter of concern in cases in which the fovea is involved by the tumor. Recently, reports (23-26) demonstrated that choroidal hemangioma could be successfully treated

by PDT with verteporfin. In this report, verteporfin was administered according to the Treatment of Age-related Macular Degeneration with Photodynamic Therapy study indications (20). However, other authors (26) suggest that shorter infusion time (2 min, 100 J/cm², 600 mW/cm²) allows an increase in the efficacy and concentration of the drug within the tumor and thereby increases the photodynamic effect on larger vessels owing to an increased light dose. The primary outcome in our case was resolution of the macular exudation and consequent restoration of visual acuity. We obtained our goal after a single session of PDT using on-



Fig. 5 - Six months after photodynamic therapy. **a)** Color photograph shows no evidence of subretinal fluid. **b, c)** Indocyanine green angiography shows persistence of the choroidal hemangioma.



ly 50 J/cm². Choroidal hemangioma may threaten the eye and impair visual function when exudative activity is present. In this case, the main criterion to treat was the presence of subretinal fluid and persistent symptoms. On the contrary, the presence of an asymptomatic choroidal hemangioma is not a criterion for re-treatment (27). Future randomized studies should evaluate and standardize different infusion times in order to determine the maximum efficacy of the treatment.

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