
Resolution of Exudative Retinal Detachment From Retinal Astrocytoma Following Photodynamic Therapy

An 18-year-old woman with a visual acuity of 20/70 OD from an exudative macular retinal astrocytoma confirmed by needle biopsy was treated with photodynamic therapy (PDT). Subsequent resolution of subretinal fluid and intraretinal edema led to improvement in vision during 6 months.

Acquired retinal astrocytoma is a benign intraocular tumor typically located in the macular or juxtapapillary region. Despite its benign cytology, progressive growth, exudation, and secondary retinal detachment, acquired retinal astrocytoma can lead to poor visual acuity or enucleation. Current therapies include laser photocoagulation, plaque radiotherapy, external beam radiotherapy, and enucleation. In this report, we describe a patient with retinal astrocytoma who showed resolution of macular edema and exudation following PDT.

Report of a Case. An 18-year-old woman had an asymptomatic retinal mass with exudative retinopathy in her right eye. Visual acuity was 20/20 OU. She had no history of tuberous sclerosis complex or neurofibromatosis. The left eye had normal vision. In the temporal macular region of the right eye, there was an amelanotic retinal tumor with slight intrinsic grey pigmentation measuring 6.0 mm in diameter and 3.0 mm thick. There were slightly dilated feeding and draining vessels. Optical coherence tomography showed shallow subretinal fluid and macular edema. The clinical diagnosis was acquired retinal astrocytoma rule-out pigment epithelial adenoma. Transvitreal fine-needle aspiration biopsy through the pars plana revealed amelanotic bland spindle and stellate cells with cytoplasmic processes without mitoses.

Immunohistochemistry showed a strong reaction to glial fibrillary acidic protein and a negative reaction to melanoma-specific antigen (HMB-45), suggesting the diagnosis of astrocytoma. Observation was advised.

Nine months later, the exudation had increased, but visual acuity was stable. Subsequently, visual acuity decreased from macular exudation, edema, and subretinal fluid to 20/25 OD (at 15 months) and 20/60 OD (at 16 months). Argon la-

Figure. An 18-year-old woman with poor visual acuity from biopsy-proven retinal astrocytoma showed improvement in vision following photodynamic therapy (PDT) to the tumor. A, Before PDT, there was progressive visual deterioration due to serous retinal detachment, exudation, and edema. Visual acuity was 20/70 OD. Argon laser photocoagulation had failed to resolve the retinal findings. Photodynamic therapy was performed with a single 83-second laser spot to the entire tumor. B, Before PDT, optical coherence tomography showed foveal edema and exudation. C, Four months after PDT, the retinal detachment, exudation, and edema showed gradual resolution, and visual acuity improved to 20/30 OD. Continued resolution of exudation was noted at 1-year follow-up. D, Four months after PDT, optical coherence tomography showed resolution of the foveal edema and persistent extrafoveal exudation that gradually resolved during 1-year follow-up.
ser photocoagulation to the tumor surface and surrounding retina was provided. Visual acuity continued to decrease to 20/70 OD at 17 months, so PDT was performed (Figure). The entire astrocytoma was treated with a single 83-second laser spot at 689 nm (50 J/cm²) following intravenous verteporfin (6 mg/m²). After treatment, resolution of macular edema, and subretinal fluid led to improved vision of 20/50 OD (at 1 month) and 20/30 OD (at 4, 8, and 12 months). The tumor showed minimal involution with decreased intrinsic vascularity.

Comment. Benign retinal astrocytic tumors include astrocytic hamartoma, acquired astrocytoma, and reactive retinal gliosis.1 Astrocytic hamartoma is typically stable, recognized in early childhood, and often found in patients with tuberous sclerosis complex or neurofibromatosis.1,3 Acquired astrocytoma is a sporadic tumor with progressive growth, retinal detachment, and poor visual acuity and requires enucleation.1,2 This tumor is typically found in young or middle-aged adults and is not associated with tuberous sclerosis complex. Retinal gliosis generally occurs following trauma, inflammation, or infection.

Acquired retinal astrocytoma shows poor response to laser photocoagulation and radiotherapy. Mennel and associates4 described a similar case in which an astrocytoma produced a visual acuity of 20/200 OD from serous retinal detachment, edema, and subretinal fluid. After 166 seconds of PDT, the retinal findings gradually cleared during 1 year, with a final visual acuity of 20/30 OD. Surprisingly, the tumor nearly completely disappeared. In our case, the retinal findings and visual acuity cleared, but the tumor showed trace reduction in size at 8 months following PDT.

In other fields of oncology, the photodynamic technique is important in the detection and treatment of tumors, particularly brain tumors, such as malignant gliomas, metastatic tumors, and meningiomas. Photodynamic therapy provides targeted destruction of remaining tumor cells following surgical excision and has been shown to increase patient survival.5

Carol L. Shields, MD
Miguel A. Materin, MD
Brian P. Marr, MD
Jaime Krepostman, MD
Jerry A. Shields, MD

Correspondence: Dr C. L. Shields, Ocular Oncology Service, Wills Eye Institute, Ste 1440, 840 Walnut St, Philadelphia, PA 19107 carol.shields@shieldsoncology.com.

Author Contributions: Dr C. L. Shields had full access to all the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

Financial Disclosure: None reported.

Funding/Support: This study was supported by the Retina Research Foundation of the Retina Society, Cape Town, South Africa (Dr C. L. Shields), the Paul Kayser International Award of Merit in Retina Research, Houston, Texas (Dr J. A. Shields), Michael, Bruce, and Ellen Ratner, New York, New York (Drs C. L. Shields and J. A. Shields), the Mellon Charitable Giving from the Martha W. Rogers Charitable Trust, Philadelphia, Pennsylvania (C. L. Shields), the LuEsther Mertz Retina Research Foundation, New York (C. L. Shields), and the Eye Tumor Research Foundation, Philadelphia (Drs C. L. Shields and J. A. Shields).


Bitemporal Hemianopia Caused by an Intracranial Vascular Loop

Optic chiasmal syndrome can be caused by a variety of lesions, including tumors and carotid artery aneurysms; however, reports of bitemporal field loss from compression by an abnormal vessel are rare.2 We describe a patient with a nonprogressive bitemporal hemianopia in whom there appeared to be compression of the optic chiasm by an elongated right anterior cerebral artery (ACA).

Report of a Case. A bitemporal hemianopia was found in a 65-year-old woman with no vascular risk factors during a routine eye examination in 2003. Magnetic resonance imaging (MRI) results were normal. One year later, the bitemporal field defect was still present and a second MRI again showed no evidence of a compressive or infiltrative process.

The patient was subsequently referred to us for an assessment. On examination, her visual acuity was 20/20 OU with normal color vision and pupillary responses. The fundi appeared normal with no evidence of tilted optic discs or retinoschisis. A bitemporal hemianopic scotoma was detected by kinetic perimetry (Figure 1A), and static perimetry revealed a bitemporal hemianopic defect, denser inferiorly than superiorly, with a pattern and severity unchanged from the examination performed 20 months earlier (Figure 1B). Multifocal electrotoretinography results were normal, but visual evoked potentials showed a mild bilateral delayed response. It was noted that the 2 previous MRIs had been performed without magnification and did not consist of thin sections.

A repeat MRI with thin-slice and magnified views of the optic chiasm was obtained and showed a vessel indenting the optic chiasm superiorly (Figure 2A). A computed tomographic angiogram confirmed an elongated right ACA that dipped inferiorly, compressing the superior aspect of the optic chiasm before looping anteriorly (Figure 2B). The ACA loop was thought to be the cause of the patient’s bitemporal hemianopia. We decided against neurosurgical intervention but recommended that the patient be evaluated at regular intervals.