Maculopathy From Handheld Diode Laser Pointer

Report of a Case. An 11-year-old girl was referred to our practice with a 3-week history of visual decrease in her right eye. She reported that, while on the school bus, one of her classmates had attempted to determine whether a laser pointer would cause pupillary constriction. During the episode she stared at the activated laser pointer for several multisecond exposures with the right eye. She immediately noted decreased vision and a central scotoma in the affected eye.

Three weeks later the best-corrected visual acuity was 20/60 −2 OD and 20/25 +2 OS. Amsler grid in the right eye revealed a relative central scotoma involving the center 2°. Anterior segment was normal in both eyes. Ophthalmoscopy of the right eye disclosed pigmentary clumping in the central fovea with loss of the central foveal reflex (Figure 1). Results of a fundus examination of the left eye were normal.

Fluorescein angiogram of the right eye demonstrated a mild early transmission defect in the central fovea corresponding to the area of pigment clumping without late staining (Figure 2). Fluorescein pattern in the left eye was normal.

During the next 6 months the patient became gradually asymptomatic. Three months after the injury, the visual acuity improved to 20/25 −2 OD with a small relative central scotoma. Ophthalmoscopy revealed improvement in the appearance of the right fovea with less pigmentary disturbance (Figure 3). Fluorescein angiogram demonstrated a less prominent transmission defect (Figure 4). On last examination, 11 months after the injury, the visual acuity improved to 20/25 +1 OD uncorrected. The patient reported normal vision with no relative scotoma. Ophthalmoscopy revealed continued improvement in the foveal pigment pattern (Figure 5). Mild pigmentary clumping was present but was much less prominent than at the initial visit.

Comment. Our patient was exposed to a commonly available handheld laser pointer. These are class 3a devices, producing a wavelength of approximately 670 nm with less than 5 mW of power. Animal experiments have previously established the theoretical possibility of retinal photocoagulation in a clear ocular media by staring at a collimated class 3a laser beam for more than 10 seconds. This is, to our knowledge, the first case report of human foveal damage from this type of laser. However, a possible laser injury in a 34-year-old man has also been reported.

The clinical course of gradual visual recovery over several months with mild laser injury is consistent with previously reported cases. At 6-month follow-up her vision had returned to normal with significant improvement in the clinical foveal appearance. However, the long-term effects of mild laser burns are not known.

Our case emphasizes the danger of diode lasers in the hands of children. GaAlAs diode lasers have been known to have a relatively low aversion response caused by the visual sensitivity of 670 nm. A per-
son cannot stare directly into the laser without experiencing painful brightness, but considering the cooperation and perseverance of a child, a potential for foveal damage exists. The ophthalmic community as well as the public should be aware of the potential danger.

Clive H. Sell, MD
J. Shepard Bryan, MD
Phoenix, Ariz

All fundus and fluorescein angiogram photographs were taken by Linda Radcliff, CRA, COT.


Cardiac Metastasis of Choroidal Melanoma

We report a rare occurrence of cardiac metastasis from uveal melanoma.

Report of a Case. A 74-year-old woman had decreased vision in the left eye. On examination, she was found to have a pigmented choroidal lesion in the superior fundus that measured 11 × 11 mm at the base and 6.2 mm in height. The diagnosis was a medium-sized choroidal melanoma (Figure 1). The patient entered the Collaborative Ocular Melanoma Study and received sodium iodide I 125 brachytherapy in October 1987. Eight years and 9 months later, the patient complained of dizziness, was examined, and was found to have a left ventricular mass (Figure 2). She underwent an excisional biopsy, but died the following day of a ruptured myocardium. Microscopic examination of the excised tissue revealed pigmented cells invading the myocardium consistent with metastatic choroidal melanoma (Figure 3).

See also page 1553

Comment. The metastatic patterns of choroidal melanoma have been well described.1-3 The most common sites of metastasis are the liver, lung, skin, and bone. Less common
sites are the central nervous system, thyroid, breast, ovary, adrenal gland, and contralateral orbit. No reported cardiac metastases of choroidal melanoma were found on a careful review of the literature.

The heart is an uncommon site of metastatic tumor. Explanations for this include the relative avascularity of the endocardium, vigorous kneading action of the myocardium, the rapid blood flow through the heart, and the paucity of lymphatic communications between the heart and surrounding tissues.4 In a review by Karwinski and Svendsen5 of more than 2800 autopsies on patients with malignant tumors, 130 (5%) of the patients had cardiac metastases. In these 130 cases, the most common primary tumors were lung (46%), cutaneous melanoma (10%), and breast (8%). There were no cases of uveal melanoma. Of the patients with cardiac metastases, most had metastatic disease elsewhere.

It is interesting that cutaneous melanoma has one of the highest rates of cardiac metastases,4,5 while cardiac metastasis from uveal melanoma is extremely rare. Most cardiac metastases are in the myocardium, which would suggest a blood borne route. The reason for this is unclear. The high rate of cardiac metastasis with cutaneous melanoma may reflect the tumor’s propensity toward widespread metastases, or the fact that cutaneous melanoma cells have a higher affinity for cardiac tissue as compared with uveal melanoma cells.

Patients with clinically recognized metastatic choroidal melanoma may also have widespread, asymptomatic, undetected micro-metastatic disease. In the absence of an autopsy, such may have existed in this case.

Richard S. Ruiz, MD
Sherif El-Harazi, MD
Daniel M. Albert, MD, MS
Paul J. Bryar, MD
Madison, Wis

Corresponding author: Daniel M. Albert, MD, MS, Department of Ophthalmology and Visual Sciences, University of Wisconsin–Madison Medical School, F4/336 Clinical Science Center, 600 Highland Ave, Madison, WI 53792-3220 (e-mail: albert@eyesee.ophth.wisc.edu).