


Paraneoplastic Optic Neuropathy From Cutaneous Melanoma Detected by Positron Emission Tomographic and Computed Tomographic Scanning

Paraneoplastic optic neuropathy (PON) is a rare disorder reported most commonly with small cell lung carcinoma. Several reports have associated cutaneous melanoma with paraneoplastic retinopathy, but to our knowledge melanoma has not been previously associated with PON. We describe a unique case of PON associated with cutaneous melanoma metastatic to lymph nodes detected by whole-body positron emission tomographic (PET) and computed tomographic (CT) scanning in a patient with bilateral optic neuropathy, vitritis, and progressive vision loss.

Report of a Case. A 67-year-old woman had photopsias and scotomas in her right eye for 6 weeks. Her left eye was asymptomatic. Her ocular history was unremarkable and her medical history was notable only for removal of a cutaneous squamous cell carcinoma 2 years prior. Visual acuity was 20/30 OD and 20/20 OS, with a small afferent pupillary defect in the right eye. Color vision results, tested with Ishihara plates, were 3 of 13 correct with the right eye and 13 of 13 correct with the left eye. Slitlamp and dilated funduscopic examination findings were remarkable for vitritis (right > left) and venous sheathing in both eyes. Fluorescein angiography demonstrated perivascular and optic disc leakage (right > left) (Figure 1A). Visual field testing revealed diffuse constriction in the right eye (Figure 1C).

Findings were normal on the following: complete blood cell count, metabolic panel, erythrocyte sedimentation rate, chest radiography, and magnetic resonance imaging of the head and orbit. Serologies were negative for hepatitis, syphilis, Lyme disease, and toxoplasmosis, and polymerase chain reaction testing results with an anterior chamber biopsy specimen were negative for herpes simplex virus, cytomegalovirus, and varicella-zoster virus. Tuberculin purified protein derivative testing results were negative. Full-field electroretinogram findings were unremarkable. Despite initial improvement with oral corticosteroids, visual field loss continued.

Because of ongoing inflammation and worsening of visual fields in both eyes (Figure 1D), visual evoked response testing was performed; it demonstrated delayed latencies (125 milliseconds OD; 132 milliseconds OS). Findings on a paraneoplastic panel including collapsin response mediator protein 5 IgG were negative, but because of increased suspicion of a paraneoplastic syndrome, whole-body PET and CT scanning was performed. It demonstrated a 1.8 × 1.5-cm right inguinal lymph node (Figure 2). Excisional biopsy revealed melanoma, and repeated pathological analysis of the “squamous cell carcinoma” diagnosed previously revealed melanoma.

At her most recent visit, the patient’s visual acuity was 20/30 OD and 20/20 OS. She had inactive vitritis while...
receiving mycophenolate mofetil, low-dose prednisone, and monthly plasmapheresis.

Comment. Paraneoplastic retinopathy and optic neuropathy are rare disorders. Paraneoplastic retinopathy is linked to several malignant neoplasms, including melanoma, but to our knowledge this is the first report of an association between metastatic melanoma and PON. Our case is further strengthened by the rigorous and systematic investigation for other potential causes and the discovery of a metastatic lesion in a patient whose course was strongly suspicious for a paraneoplastic syndrome. Greater recognition of this association is critical given the nearly 200% increase in cutaneous melanoma over the last 25 years and the need for heightened clinical awareness in cases of PON to prompt and guide diagnosis.

The diagnosis of PON is challenging, and the most appropriate workup remains unknown. A blood sample was sent to the laboratory of Charles Thirkill, PhD, at the University of California, Davis, with initial positive results on the vasculitis assay, but confirmatory testing for autoantibodies could not be completed due to insufficient sample. However, it is clear that the absence of autoantibodies such as collapsin response mediator protein 5 IgG or the absence of neurological deficits (as in this case) does not rule out its diagnosis, and whole-body imaging should be performed in suspected cases. In this latter regard, several studies have reported that PET and CT scanning is superior to conventional imaging for detection of primary and metastatic lesions. Scanning with PET and CT uses fluorodeoxyglucose, a radioactive isotope that is taken up by actively growing and metabolically demanding cells. In disseminated carcinoma of unknown primary, Sevé et al found that 41% and 37% of patients had a primary or metastatic tumor, respectively, that was detected on PET scanning but was undetected on conventional imaging.

The best therapeutic treatment of PON is also unknown and the disease can progress despite removal of the inciting lesion. Long-term immunosuppression, plasmapheresis, and intravenous immunoglobulin all have been reported anecdotally as potential treatments; in our patient, treatment with the combination of mycophenolate mofetil, prednisone, and plasmapheresis appeared to stabilize her vision loss.

In summary, we describe a case of PON due to metastatic cutaneous melanoma where the diagnosis was confirmed ultimately with PET and CT scanning that allowed timely treatment of the patient’s underlying cancer. Greater awareness of this association may allow timely diagnosis and treatment of future patients.

Scott D. Schoenberger, MD
Stephen J. Kim, MD
Patrick Lavin, MD

Author Affiliations: Department of Ophthalmology, Vanderbilt Eye Institute (Drs Schoenberger, Kim, and Lavin) and Department of Neurology, Vanderbilt University (Dr Lavin), Nashville, Tennessee.

Correspondence: Dr Kim, Department of Ophthalmology, Vanderbilt Eye Institute, 2311 Pierce Ave, Nashville, TN 37232 (skim30@gmail.com).

Author Contributions: All of the authors had full access to all of the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis.

Financial Disclosure: Dr Kim is a paid consultant for Ophthotech, New York, New York.

Funding/Support: This work was supported in part by an unrestricted grant from Research to Prevent Blindness to the Department of Ophthalmology and Visual Sciences, Vanderbilt University School of Medicine.


Prostate cancer is the most common malignant neoplasm in men in developed countries and the second most common worldwide. Androgen deprivation therapy is often used for recurrent or metastatic disease. Gonadotropin-releasing hormone agonists such as leuprolide acetate are the most frequently used medications for this purpose.

Prostate cancer rarely metastasizes to the choroid. A large retrospective study found prostate cancer to be the primary site in only 6% of patients with uveal metastasis. In addition to hormonal therapy, patients with choroidal metastasis have been traditionally treated with external beam radiation or brachytherapy. We report a case of choroidal metastasis from prostate cancer successfully treated with leuprolide alone.

**Report of a Case.** A 71-year-old man had a 3-month history of progressive loss of vision in the left eye. His medical history was significant for prostate adenocarcinoma treated with radical prostatectomy 7 years previously. The cancer was limited to the capsule and there was no lymph node involvement. His prostate-specific antigen level had shown a gradual increase from 0.012 to 5.6 ng/mL (to convert to micrograms per liter, multiply by 1.0) over a 4-year period. Social history was negative for smoking. On examination, he had best-corrected visual acuity of 20/20 OD and hand motions OS. His left fundus examination demonstrated an amelanotic choroidal mass involving the superotemporal arcade associated with subretinal fluid (Figure 1).

Ocular echography displayed a choroidal mass measuring 20 × 17 mm in basal dimension with an apical height of 10 mm. The mass demonstrated central hy-