

Detection of a Second Primary Tumor During Whole-body Positron Emission Tomography for Choroidal Melanoma

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Choroidal melanomas are the most common primary intraocular malignancy. They are frequently associated with late systemic metastasis, with liver being the most common site of metastasis.^{1,2} In the presence of a primary tumor elsewhere in the body, a positron emission tomography (PET) scan is recommended to enable early detection of distant metastasis. For choroidal melanoma, liver function tests are recommended periodically to identify metastatic spread.^{2,3} The role of PET in the management of choroidal melanoma is unclear.

Herein we report the detection of a second tumor, an esophageal adenocarcinoma, following whole body PET undertaken to detect metastasis. To our knowledge, this is the first report showing the coexistence of both an esophageal carcinoma and choroidal melanoma.

CASE REPORT

A woman aged 60 years was referred to our center with complaints of gradual progressive decrease of vision in her left eye of 4 months duration. The patient did not have any other ophthalmic or systemic complaints. She was known to be hypertensive, and her hypertension was controlled on medication.

Systemic examination was normal with absence of any lymphadenopathy. Visual acuity was 20/30 in the right eye and no light perception in the left. Right eye

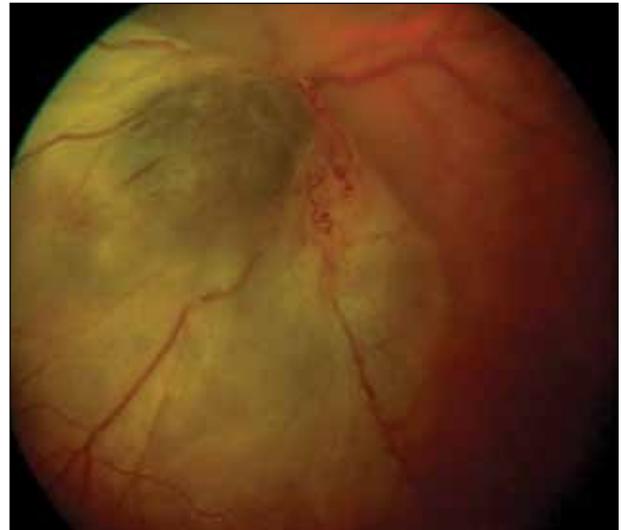


Figure 1. Fundus photograph of the left eye showing a large pigmented choroidal mass involving the inferonasal quadrant and obscuring the optic nerve head.

examination showed no abnormality. In the left eye, ophthalmoscopy revealed a subretinal, solid brown pigmented mass in the inferonasal quadrant (Figure 1). The mass also involved the optic nerve head, and there was surrounding exudative retinal detachment. A diagnosis of choroidal melanoma was considered, and imaging studies were undertaken to confirm the diag-

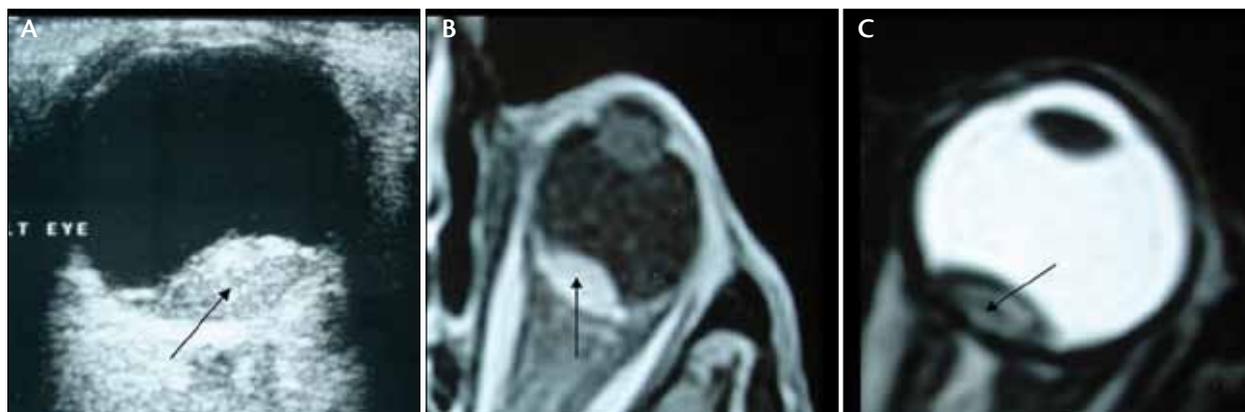


Figure 2. Ultrasound image of the left globe shows a dome-shaped choroidal mass (A, arrow); MRI reveals a hyperintense choroidal mass in T1 image (B, arrow) and hypointense mass in T2 image (C, arrow).

nosis and to rule out any metastasis.

On ultrasound evaluation, the mass was dome-shaped (Figure 2A), and a positive angle kappa was present. Internal reflectivity showed a heterogeneity with sound attenuation. Magnetic resonance imaging (MRI) of the left eye revealed a subretinal mass that was hyperintense on T1 image (Figure 2B) and hypointense on T2 image (Figure 2C). Both ultrasonographic and MRI features were consistent with a diagnosis of choroidal malignant melanoma.

Liver function tests, chest x-ray, and ultrasonography of the abdomen were normal. A whole body fluorodeoxyglucose (FDG) PET/computed tomography (CT) scan, undertaken to identify early metastasis, showed a homogeneous left paravertebral mass (Figure 3A and B). Based on this finding, presence of an esophageal tumor was considered. Barium swallow study showed “apple coring” appearance of esophageal cancer (Figure 3C). After consulting with gastroenterology, an endoscopic biopsy of the esophageal mass was done, and histopathology confirmed esophageal adenocarcinoma.

The disease condition, prognosis, and risk to life were explained to the patient. The patient declined further management, including intraocular biopsy and enucleation, and she requested discharge from inpatient care.

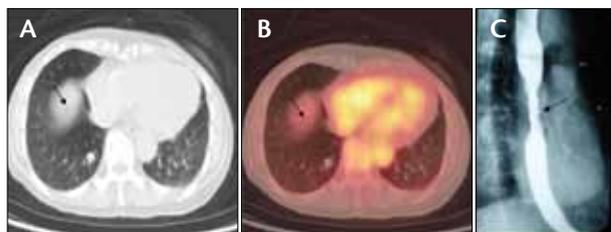


Figure 3. Combined PET/CT image (A-B) reveals a paravertebral mass (arrow) adjacent to the esophagus. Barium swallow image (C) shows “apple-coring” appearance.

DISCUSSION AND CONCLUSION

Choroidal melanomas are the most common primary intraocular malignancy. They are frequently associated with late systemic metastasis, with liver being the most common site of metastasis.^{1,2} Clinical evaluation and ultrasonography allows diagnosis of choroidal melanoma with a diagnostic accuracy of 99.7%.⁴ MRI also shows characteristic features in choroidal melanoma. In our patient, appearance of the mass on clinical examination, ultrasonography and MRI were confirmative of malignant choroidal melanoma.

In the presence of a primary tumor elsewhere in the body, PET is recommended to enable early detection of distant metastasis. For choroidal melanoma, liver function tests are recommended periodically to identify metastatic spread.^{2,3}

The role of PET in the management of choroidal melanoma is unclear. In a small case series of choroidal melanoma patients reported by Finger et al, PET/CT was helpful in detecting occult metastasis.⁵ In our patient, no occult metastasis was evident on PET/CT; instead this imaging modality revealed the presence of an esophageal mass, the malignant nature of which was confirmed on histopathologic examination.

Two possibilities arose from the PET study in our patient: first, that 2 different malignant tumors (esophageal adenocarcinoma and malignant choroidal melanoma) were present in the same patient; and, second, that the ocular lesion was a secondary metastasis with features simulating a melanoma. This dilemma could have been solved only by histopathology of the ocular mass after enucleation, which was not possible as the patient refused further care. The typical clinical appearance and the high diagnostic accuracy of noninvasive modalities such as ultrasonography in diagnosing choroidal melanoma suggests that our patient had a

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double-primary malignancy rather than metastasis.

To the best of our knowledge there are no previous reports describing the detection of a second primary malignancy while performing PET/CT to rule out distant metastasis in a patient with choroidal melanoma. PET may hence be useful not only in identifying occult metastasis but also in identifying other coexisting primary tumors in patients with choroidal melanoma. This may have a significant bearing on subsequent management of the patient. ■

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