Using 18F-fluoro-2-deoxyglucose Positron Emission Tomography to Detect Primary Lung Cancer in an Isolated Choroidal Metastasis

Ocular metastases, and particularly choroidal metastases, can precede detection of primary neoplasm, mainly lung cancers. In 39% to 51% of cases, primary tumors remain undetected despite intensive and invasive investigations using conventional tools. Based on the increased glycolytic activity, positron emission tomography (PET) scanning is a new imaging method for locating cancer cells used in the localization of primary tumors, but it has never been reported in ophthalmology. We report a case of choroidal metastasis from a lung adenocarcinoma only diagnosed by PET scan.

Report of a Case. A 50-year-old man was referred for choroidal metastasis of unknown origin. He had a 1-month history of blurred peripheral vision in the right eye and severe loss of visual acuity. He had smoked 20 cigarettes per day for 35 years. Ophthalmic examination revealed visual acuity worse than 20/400 OD. Anterior segment examination of both eyes and fundus examination of the left eye had normal results. His right fundus showed a solid amelanotic lesion about 5 disc diameters in the posterior pole, including the macula and the optic disc. It was associated with moderate inferior exudative retinal detachments. Ultrasonographic findings of a largest tumor diameter of 14.5 mm and a height of 4 mm and high internal reflectivity associated with fluorescein angiographic findings of hyperfluorescence and numerous pinpoints (Figure 1) were consistent with the diagnosis of choroidal metastasis. Orbital computed tomography scan and magnetic resonance imaging (MRI) (Figure 2) showed a solid mass in the inferior temporal quadrant of the right globe with contrast enhancement. Physical examination results were normal. Neither a primary tumor or additional metastases were found despite extensive investigations including total-body computed tomography, neck ultrasonography, otorhinolaryngeal exploration, bronchoscopy, gastroscopy and colonoscopy, lumbar puncture, cerebral
visceral metastasis, as an option for curative treatment is not unlikely. In our particular case, FDG-PET proved to be a very useful method for diagnosis and therapeutic management.

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Ocular Hypotony Secondary to Spontaneously Ruptured Sclera in Choroidal Coloboma

We describe a patient who developed unilateral optic disc edema due to ocular hypotony secondary to spontaneous rupture of the thin sclera forming the floor of a chorioretinal coloboma. B-scan ultrasonography was useful in confirming the diagnosis of a posterior filtering site. The scleral defect was successfully treated with implantation of a meridional silicone buckle.

Report of a Case. A 63-year-old white woman complained of a 3-month history of painless blurred vision in her left eye. Her medical and ocular history was unremarkable. Her best-corrected visual acuity was 20/20 OD and 20/50 OS, with intraocular pressure of 15 mm Hg OD and 4 mm Hg OS. Biomicroscopic fundus examination of the patient’s left eye was remarkable for fully developed optic disc edema with gross elevation of the optic nerve head, blurred disc margins, and choroidal folds consistent with hypotony (Figure, A). The peripheral fundus examination showed a chorioretinal coloboma in the inferonasal equatorial retina, with an oval retinal break and a subclinical retinal detachment restricted to the colobomatous area. The size of the coloboma was about 6 disc diameters, while the size of the break was 1.5 disc diameters. The disc and the macula were not involved in the coloboma. Results of examination of the right eye were normal.

Fluorescein angiography showed dye leakage from the optic nerve in the left eye, staining at the edge of the coloboma, and a dark area caused by the absence of the choroid and of the retinal pigment epithelium (Figure, B). Indocyanine green angiography confirmed the absence of choroid (Figure, C). B-scan ultrasound examination showed a diffuse swollen choroid and a hypoechoic region posterior to the sclerochoroidal defect in the markedly thin and deformed sclera that formed the floor of the coloboma, consistent with fluid (Figure, D).

On the basis of findings from the clinical examination and supporting imaging studies, a diagnosis of ocular hypotony secondary to spontaneous posterior rupture of the thin sclera, forming the floor of the coloboma, was made.

Treatment options were evaluated; the day before surgery, the retinal break was treated with laser photocoagulation along the border of the coloboma as a prophylactic procedure. During the surgery, limited prolapsed vitreous was excised, 2 vertical mattress sutures were placed between the scleral coloboma to create a deep buckle, and a meridional solid silicone buckle was fitted to cover the scleral defect, with the goal of sealing the posterior filtering site.

One year postoperatively, examination of the left eye was remarkable for a visual acuity of 20/25 and intraocular pressure of 13 mm Hg; fundus view showed the retina attached with a mildly swollen optic nerve head and some choroidal folds still present.

Figure 3. 18F-fluoro-2-deoxyglucose positron emission tomography scan showing 2 isolated hypermetabolic foci in the left upper pulmonary lobe (top arrow) and the left hilum (bottom arrow).