Documentation of optic disc melanocytoma by spectral and time domain optical coherence tomography

Melanocytoma is a benign melanocytic lesion that usually occurs in the inferotemporal area of the optic nerve head. The uveal melanocytes emanating from the neural crest during embryogenesis are believed to be the cells of origin. These cells are present in the lamina choroidalis, the portion of the optic nerve adjacent to the choroid. The tumour is typically unilateral and stationary, and rarely undergoes a malignant transformation. The condition is usually asymptomatic except when the tumour undergoes extensive necrosis or malignant transformation, or is associated with the choroidal neovascular membrane.

Optical coherence tomography (OCT) is increasingly used in various retinal disorders because it is user friendly and has high-resolution imaging capabilities. Spectral domain OCT has been recently introduced for clinical use. This system allows a faster acquisition time than the conventional time domain OCT, thus allowing a larger number of images to be acquired. This increased density of A-scans within B-scans results in scans of higher resolution. We present the OCT findings (both spectral domain and time domain) in a patient with optic disc melanocytoma.

A 55-year-old African-American male was referred to the oncology service for evaluation of possible melanocytoma of the optic nerve head OS. The medical history was significant for hypertension and glaucoma OD. On examination, visual acuity was 20/20 OU. Confrontation visual field, pupils, and extraocular motility were normal. Slit-lamp examination OD revealed a trabeculectomy bleb with peripheral iridectomy. OS anterior segment examination was normal. Dilated fundus examination revealed a cup-to-disc ratio of 0.8 OD and 0.75 OS with the rest of the fundus normal in OD. Fundus examination OS revealed a flat, densely pigmented lesion adjacent to the optic disc inferotemporally, suggestive of melanocytoma (Fig. 1). Fluorescein angiography revealed a darkly pigmented lesion blocking choroidal circulation with overlying normal retinal vasculature (Fig. 1). Both time domain OCT (Stratus OCT III, Carl Zeiss Meditec Inc, Dublin, Calif.) and spectral domain OCT (OCT/SLO, OTI Ophthalmic Technologies Inc, Toronto, Ont.) through the melanocytoma revealed the lesion to be of high reflectance with optical shadowing (Fig. 2).

Time domain OCT of melanocytoma has been demonstrated in previous reports to have a high-reflectance signal with optical shadowing. This high-reflectance signal is usually continuous with the retinal nerve fibre layer in the adjacent retina. To the best of our knowledge this is the first report of spectral domain OCT findings of melanocytoma and their comparison with the findings from standard time domain OCT. Spectral domain OCT revealed areas of hyperreflective retinal thickening at the area of melanocytoma. In certain areas of the tumour, the hyperreflective signal characteristics of the lesion do look similar to those of the adjacent retinal nerve fibre layer, as described in the literature. However, both types of OCT also demonstrated higher reflectivity and focal thickening of the retinal pigment epithelium layer with optical shadowing. This particular finding has not been mentioned in previously published reports. We hypothesize that our finding could be due to a reactionary hyperplasia of the retinal pigment epithelium or to the densely packed collections of the migrated uveal melanocytes at the retinal pigment epithelium.

In summary, melanocytoma of the optic nerve head may have unique optical coherence tomography characteristics, especially with the new generation of higher resolution instruments. This may help evaluate, follow, and determine the prognosis for these patients; however, larger studies are required for clinical confirmation.
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REFERENCES


**Uveal effusion simulating uveal ring melanoma**

A 61-year-old male was referred for evaluation of a peripheral, elevated, melanotic fundus lesion, suspected to be a diffuse ciliochoroidal melanoma, in the left eye. Three weeks earlier, during a routine ophthalmological examination, the patient was noticed to have bilateral shallow anterior chambers, which prompted his ophthalmologist to perform bilateral prophylactic Nd:YAG laser iridotomies before dilating the pupils. The ciliochoroidal lesion was detected a few days later after dilation of the pupils. The ciliochoroidal lesion was detected a few days later after dilation of the pupils. On examination, the patient’s best-corrected visual acuity was 20/30 in both eyes. His hypermetropic corrective glasses, in spherical equivalence, were +6.5 diopters in the right eye and +7.0 diopters in the left. Slit-lamp examination showed bilateral map-dot-fingerprint corneal dystrophies, bilateral normal sclerae, bilateral moderately shallow anterior chambers, normal iris colour and pattern in both eyes with patent superior iridotomies, and bilateral early nuclear cataracts. Intraocular pressure was 16 mm Hg in both eyes. Gonioscopy showed bilateral, narrow open angles, Shaffer grade II, with no other angle pathology. Funduscopy showed no abnormalities in the postequatorial regions of both fundi, but in the left eye there was a peripheral, smooth, brown swelling stretching the ora serrata, extending between the 12 and 4 o’clock meridian, with a localized pocket of subretinal fluid at its base. Indentation funduscopy revealed that this swelling continued for 360° around the ciliochoroidal junction of the left eye with nearby areas of localized subretinal fluid, suggesting peripheral uveal ring melanoma. However, indentation funduscopy of the right eye revealed 2 similar small elevations at the extreme temporal and nasal fundus periphery. Ultrasound biomicroscopy demonstrated bilateral fluid accumulation in the supraciliary space and peripheral suprachoroidal space, elevating the ciliary body and peripheral choroid from the sclera (Fig. 1). This ciliary body elevation caused its rotation around the scleral spur, bringing the ciliary processes and the lens forward to produce narrowing of the anterior chamber (Fig. 2). No solid lesions were detected.

Uveal effusion syndrome must be distinguished from a solid tumour, since previously some eyes with this condition were mistakenly believed to have melanoma and were erroneously enucleated.1 The pathogenesis of idiopathic uveal effusion syndrome, as hypothesized by Gass,2 is the presence of abnormally dense sclera obstructing venous outflow, which leads to uveal fluid retention with subsequent uveal swelling and subretinal transudation. The syndrome is commonly associated with nanophthalmia and high hypermetropia, and the management of an extensive effusion is by subscleral sclerectomies to create a bypass outflow.3 Secondary uveal effusion may result from ocular hypotony or inflammations such as uveitis or scleritis.4 Uveal effusion in our patient was detected a few days after laser iridotomy. It is unclear whether he had pre-existing idiopathic

**Fig. 1—**UBM image shows fluid retention in the supraciliary and suprachoroidal spaces. (UBM, ultrasound biomicroscopy.)

**Fig. 2—**UBM image shows ciliary body forward rotation with narrowing of the anterior chamber. (UBM, ultrasound biomicroscopy.)