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Choroidal nevus with retinal invasion, clinical and imaging features

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ABSTRACT

Purpose: To report a clinically challenging case of a choroidal nevus with retinal invasion with accompanying ancillary testing.

Observations: A 60-year-old Caucasian female was referred for a suspicious melanocytic choroidal lesion in her left eye. Ophthalmoscopic examination revealed a melanocytic choroidal lesion, measuring 10 mm × 10 mm in basal diameter. The lesion had a clinically evident area of retinal invasion seen as a protruding choroidal mass at its center, darker in appearance compared to the rest of the lesion, obscuring retinal vessels. The choroidal nevus had associated chronic retinal changes and the absence of overlying orange pigment or subretinal fluid. On fundus autofluorescence, there was a hypoautofluorescent area showing the site of retinal invasion. Fluorescein angiography at the lesion site exhibited central blocked perfusion corresponding to the area of retinal invasion. Ultrasonography showed a dome-shaped choroidal lesion that was optically dense with a medium-high internal reflectivity measuring 3.3mm in thickness. The optical coherence tomography showed a choroidal mass extruding through a break in Bruch's membrane with inner retinal invasion. A watchful waiting strategy was adopted, and at 28 months follow-up, the choroidal lesion did not show growth or presence of new suspicious features of malignant transformation.

Conclusion and importance: This case highlights the importance of recognizing the key features of choroidal nevi with retinal invasion, which can prevent the treatment of a benign condition and assist in the arrival of a correct diagnosis. These lesions should be monitored for long-term.

1. Introduction

Choroidal nevus is a common intraocular tumor composed of low-grade melanocytes, with a prevalence of 5.6% in Whites, 2.7% in Hispanics, and 0.6% in Blacks.¹ In one large series, choroidal nevi were observed to have a mean thickness and diameter of 1.5mm and 4.9mm, respectively.² They need to be monitored due to their potential to cause visual acuity loss and transformation into choroidal melanoma.² The annual transformation rate of a choroidal nevus into a choroidal melanoma has been estimated at 1 in 8,845.³ Approximately less than 1% of choroidal nevi exhibit retinal invasion,² and it is a feature more commonly associated to mushroom-shaped choroidal melanoma.⁴ We present the case of a 60-year-old Caucasian female with the largest choroidal nevus with retinal invasion yet to be published, focusing on the clinical and imaging characteristics description.

2. Case report/case presentation

A 60-year-old Caucasian female was referred to our ocular oncology center for a suspicious melanocytic choroidal lesion in her left eye (OS). Aside from a history of stage 1 macular hole in her right eye (OD), her ocular and systemic medical history were non-contributory. The best-corrected visual acuity (BCVA) was 20/80 OD and 20/25 OS. The anterior segment examination was unremarkable. Ophthalmoscopic examination was significant for a melanocytic choroidal lesion in the OS, located in the inferonasal periphery measuring 10 mm × 10 mm in basal diameter that was 7mm away from the optic nerve (Fig. 1a). The lesion had a clinically evident area of retinal invasion seen as a protruding choroidal mass at the central portion of the lesion. This protruded area had a darker appearance compared to the rest of the lesion, obscuring retinal vessels. There was associated drusen and fibrosis. Overlying orange pigment and subretinal fluid (SRF) were absent. On fundus autofluorescence (FAF) there was a hypoautofluorescent area showing the site of retinal invasion by the choroidal lesion (Fig. 1b).

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Fluorescein angiography (FA) at the lesion site exhibited central blocked perfusion corresponding to the area of retinal invasion (Fig. 1c). Ultrasonography (US) showed a dome-shaped choroidal lesion that was optically dense with a medium-high internal reflectivity measuring 3.3mm in thickness (Fig. 1d). The optical coherence tomography (OCT) showed a choroidal mass extruding through a break in Bruch's membrane with inner retinal invasion (Fig. 1e). OCT also revealed associated chronic changes such as drusen, retinal pigment epithelium (RPE) hyperplasia, and retinal thinning overlying the choroidal mass. A watchful waiting strategy was adopted, and at 28 months follow-up, the choroidal lesion was stable with no growth or presence of new suspicious features of malignant transformation, confirming our diagnosis of a choroidal nevus with retinal invasion.

3. Discussion/conclusion

To our knowledge, there has only been one publication in the English

literature describing choroidal nevus with retinal invasion.⁵ Another publication found retinal invasion incidence to be 23–40% of enucleated eyes with choroidal melanoma.⁶ This is compared to the less than <1% of choroidal nevi that exhibit retinal invasion.² It is clear that choroidal nevi do not typically invade the outer or inner retina,⁵ but it is important to distinguish them from choroidal melanoma when they do.

On funduscopy, a choroidal nevus with retinal invasion will typically show a protruding portion of the lesion that obscures the overlying retinal vessels, and that is darker in appearance than the surrounding lesion. This darker area is typically brown and not black as found in RPE hyperplasia.⁵ Other clinical features that may be present include associated fibrosis and drusen, and there is usually an absence of overlying orange pigment and SRF.⁵ Additionally, the present case demonstrated a maximum thickness of 3.3mm and basal diameters of 10 mm × 10 mm, substantially greater than the mean thickness and basal diameter of choroidal nevus reported in most large series.

OCT of the lesion showed the typical, expected characteristics of a

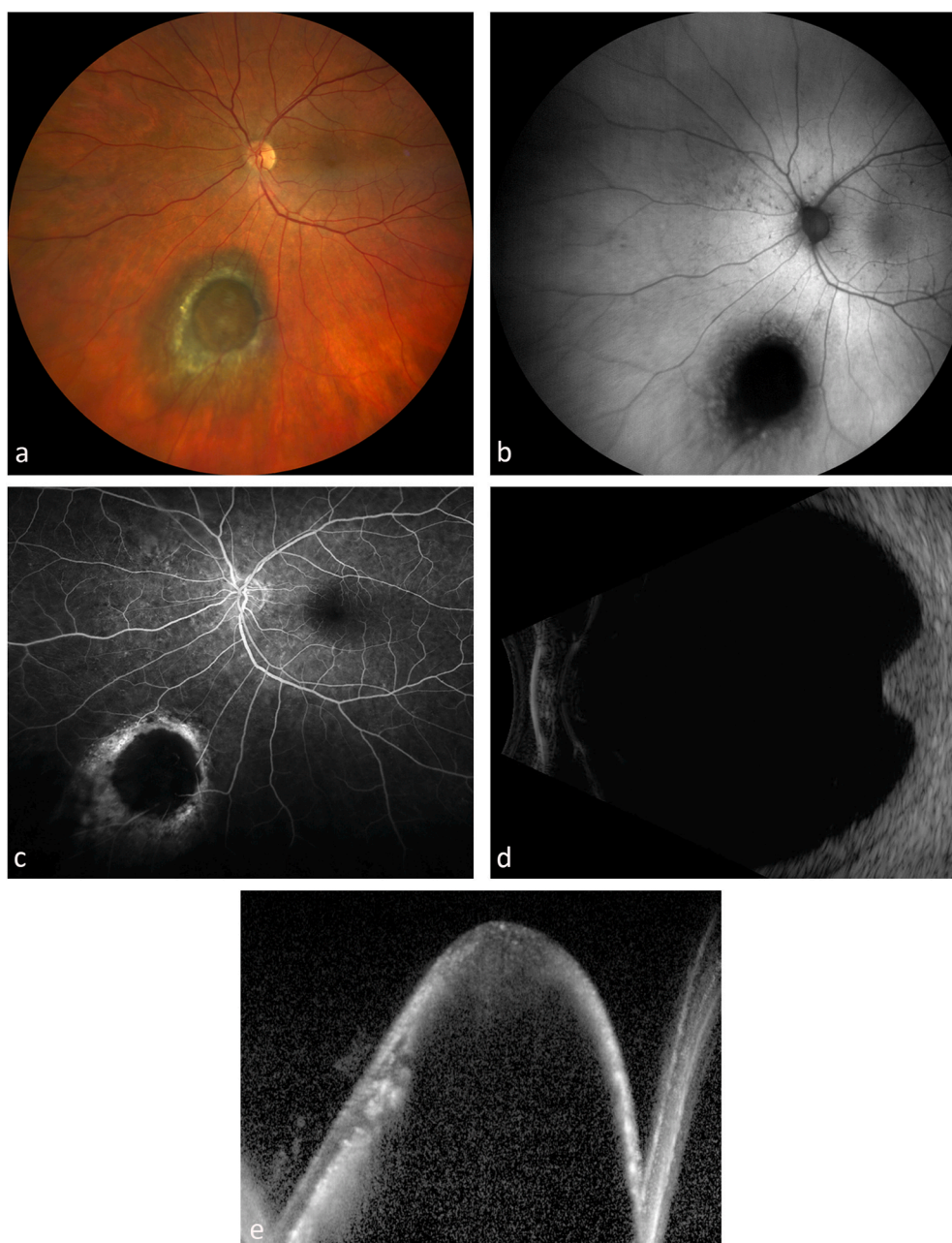


Fig. 1. Choroidal nevus with retinal invasion in the left eye. (a) Fundus photograph of a pigmented choroidal lesion with surrounding drusen and fibrosis is seen with a central more elevated darker area that obscures retinal vessels. On the (b) auto-fluorescence photograph, the area of retinal invasion is delineated by a central hypo-autofluorescent area that is also evident on (c) fluorescein angiography as hypofluorescence. (d) B-scan ultrasonography reveals a 3.3mm thick optically dense dome shaped choroidal lesion and (e) enhanced depth imaging-optical coherence tomography shows the site of retinal invasion.

choroidal nevus, with a smooth-surface topography of the choroid.⁷ Chronic retinal changes, such as thinning, disruption of the architecture and focal thickening of the RPE were also described in our case.⁸ The specific difference between a typical choroidal nevus and our patient with associated retinal invasion is the Bruch's membrane rupture and inner retinal invasion, that can be seen on the OCT (Fig. 1b). The mechanism of retinal invasion remains unknown,⁹ but may be related to degenerative changes overlying the lesion, as described on the OCT, that leads to weakening of the Bruch's membrane and subsequently allowing nevus invasion of the retina.⁵

On FAF, there is a hypoautofluorescent area, which correlates with the site of retinal invasion. FA reveals blocked perfusion centrally at the site of retinal invasion. This FA characteristic can also be observed in choroidal melanoma with retinal invasion, but unlike choroidal nevi with retinal invasion, choroidal melanoma usually also present with vascular obliteration and tumor-retinal vascular anastomosis or double circulation.¹⁰

Ultrasonography in choroidal nevus with retinal invasion can present with an acoustically dense dome-shaped choroidal elevation,⁵ as was present in our patient.

As with all choroidal nevi, there is always a concern for malignant transformation, so a choroidal nevus with retinal invasion should be monitored closely for changes. As presented in our report, recognizing the key features of choroidal nevi with retinal invasion can prevent the treatment of a benign condition.

Patient consent

Written consent to publish this case has not been obtained. This report does not contain any personal identifying information.

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Authorship

All authors attest that they meet the current ICMJE criteria for

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Declaration of competing interest

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