

Slow Growth of Choroidal Nevus Without Transformation to Melanoma

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The choroidal nevus is a benign melanocytic tumor of the ocular fundus that carries a small risk for transformation into small choroidal melanoma.¹⁻³ According to Singh et al,³ it is estimated that the annual rate for malignant transformation of choroidal nevus into melanoma is 1 in 8845. The approach for management of choroidal nevus is close observation of the tumor on a 4- to 6-month basis, then annually, after stability is established. Nevus growth in basal diameter and/or thickness is regarded as suspicious for transformation into melanoma.^{4,5} However, it

should be realized that some nevi, particularly in younger patients, can show slow and limited enlargement over a long period of time and still maintain overall stability and nonprogression into melanoma.^{1,5} The differentiation of nevus enlargement as suspicious for melanoma vs simple slow enlargement relies on an assortment of risk factors. Herein, we document a case of choroidal nevus with slow growth and without evidence of transformation into a melanoma. This case emphasizes the importance of understanding the behavior of choroidal nevus and differentiation from small melanoma.

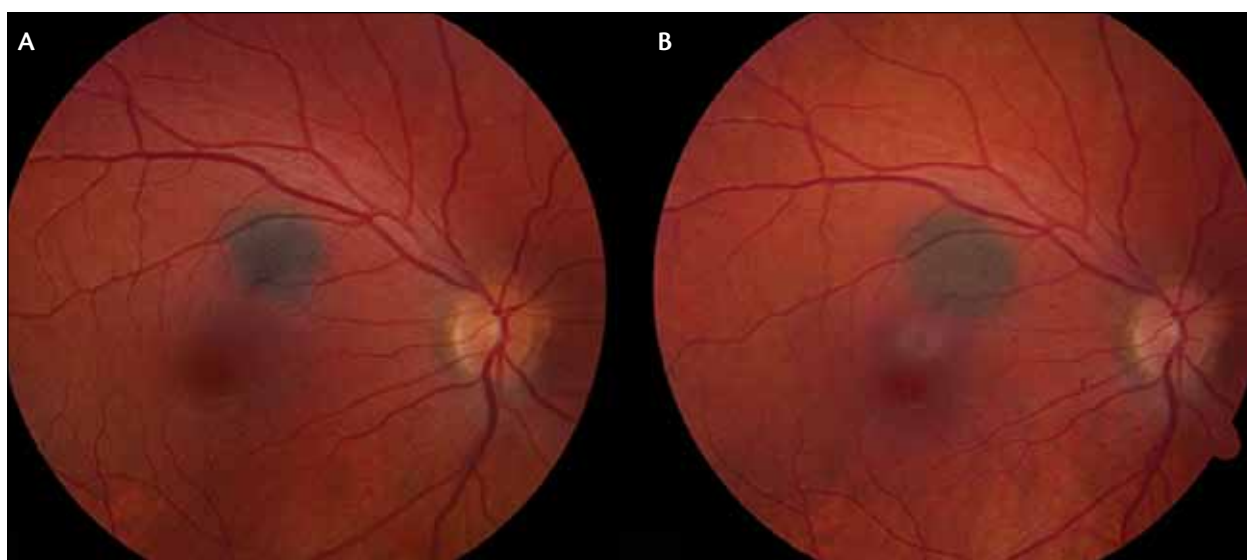


Figure 1. Baseline fundus photograph of the right eye revealing a pigmented 2.0 mm x 1.5 mm choroidal nevus in the superior macular region without orange pigment, subretinal fluid, or drusen (A). At 52-month follow-up the nevus was slightly larger, measuring 2.2 mm x 2.0 mm x 1.3 mm, again lacking orange pigment, subretinal fluid, or drusen (B).

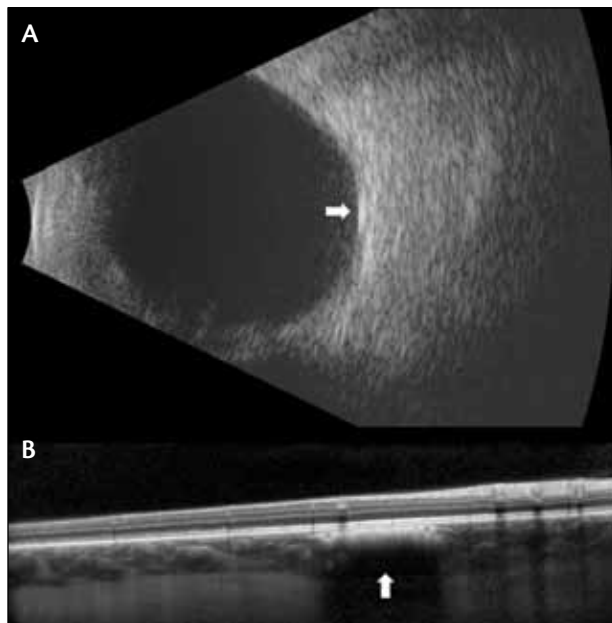


Figure 2. Ultrasonography of the right eye showing a flat dense choroidal mass with thickness of 1.3 mm (arrow; A). Optical coherence tomography of the right eye at 52 month follow-up showing intact retina with no subretinal fluid and full thickness choroidal mass (arrow) with compression of inner choroidal tissue anteriorly and deep optical shadowing from pigmented cells (B).

CASE REPORT

A 22-year-old white woman was found on routine examination to have a choroidal nevus in the right eye (OD) that demonstrated slow enlargement over 6 months. Medical history and ocular history were unremarkable. Family history disclosed maternal skin melanoma. On examination, best corrected visual acuity was 20/40 OD and 20/50 in the left eye (OS). The anterior segment was unremarkable bilaterally (OU) with the exception of multiple iris nevi. The left fundus was normal. The right fundus revealed a pigmented choroidal lesion measuring 2.0 mm x 1.5 mm located in the superior macular region (Figure 1). There was no subretinal fluid, orange pigment, or drusen. Ultrasonography revealed a flat, dense choroidal mass with thickness of 1.3 mm (Figure 2). Optical coherence tomography (OCT) showed intact retina with no subretinal fluid, and the mass occupied full-thickness choroid with compression of inner choroidal tissue (Figure 2). A diagnosis of benign choroidal nevus was made, and close follow-up was recommended due to the enlargement.

Over the ensuing 52 months, there was a further slight enlargement to 2.2 mm x 2.0 mm x 1.3 mm (Figure 1). The clinical appearance and imaging of the nevus were

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otherwise unchanged. Final visual acuity was 20/30 OU. Due to lack of melanoma features and lack of risk factors for transformation into melanoma, cautious observation of the slowly changing small choroidal nevus was advised.

DISCUSSION

The choroidal nevus is generally considered to be a stable, innocuous fundus lesion with moderate risk for visual acuity loss if subfoveal and miniscule risk for growth into melanoma.^{1,4,8} In a population-based analysis of 3654 subjects over age 48 years from the Blue Mountains Eye Study, 264 (7%) subjects were identified with choroidal nevus. The nevus demonstrated various coloration listed as blue-gray (87%), patchy hypomelanotic (4%), amelanotic with a pigmented halo (1%), brown (<1%), and indeterminate appearance (6%).² The mean nevus diameter was 1.25 mm, and growth into melanoma was rare.² In a clinic-based analysis of 3422 eyes with choroidal nevus in patients of all ages followed at an ocular oncology center, the tumor features for adult patients included mean tumor basal diameter of 4.7 mm, mean thickness of 1.5 mm, related drusen in 40%, and subretinal fluid in 15%.¹ In that series, the nevi were generally referred to rule out melanoma; thus, they were larger than the population-based account, and they demonstrated more risk factors.²

The management of choroidal nevus involves annual documentation of the mass with examination and fundus photography. Imaging by ultrasonography can be helpful in delineating classic features of dense acoustic quality, tumor thickness of 2 mm or less, and lack of invasive features. Newer imaging techniques with OCT assist in subretinal fluid detection, and fundus autofluorescence helps with overlying lipofuscin detection.^{1,4,8} The presence of subretinal fluid and overlying lipofuscin is suggestive of risk for transformation of nevus into melanoma.⁴ Based on an analysis of 2514 choroidal nevi, the relative risk for growth into melanoma was 2.8 times greater if lipofuscin was detected, and, independently, 3.2 times greater if subretinal fluid was found over nevus.⁴ Alternatively, the absence of subretinal fluid and overlying lipofuscin implies chronic nevus.⁴ In our case,

TABLE 1. RISK FACTORS FOR MALIGNANT TRANSFORMATION OF CHOROIDAL NEVI (TFSOM-UHHD)

To	Thickness > 2.0 mm
Find	Fluid (subretinal)
Small	Symptoms
Ocular	Orange pigment
Melanoma	Margin of the tumor < 3.0 mm to disc
Using Helpful	Ultrasound hollowness
Hints	Halo absent
Daily	Drusen absent

these findings were negative, and thus suggestive of benign nevus with slow growth rather than small choroidal melanoma.

Despite the lack of clinical risk factors, our patient showed slow enlargement of the choroidal nevus. Slow growth of choroidal nevus does not necessarily equate to malignant transformation. In a retrospective clinic-based analysis of 278 patients with choroidal nevus followed for a minimum of 7 years at an ocular oncology center with photographic documentation at each visit, approximately 31% showed minimal, slow enlargement without clear-cut malignant transformation.⁵ The mean growth rate was 0.06 mm per year in basal diameter over a mean follow-up of 15 years.⁵ The only factor predictive of benign growth was young age. Patients younger than 40 years of age, as in this case, showed the highest incidence of slow enlargement.⁵ As imaging techniques improve and become more widespread, we believe slow growth of small choroidal nevus could be found more commonly by the practicing ophthalmologist.¹

By comparison, choroidal nevus transformation into melanoma occurs within a shorter period of time and with more rapid pace. In a large cohort analysis of 2514 consecutive cases of choroidal nevus followed at a tertiary ocular oncology center, growth into melanoma occurred in 9% of eyes by 5 years, and the mean transformation rate in those with growth was 1.0 mm per year in basal diameter or thickness.⁴ Rapidity and extent of growth is much more obvious in small melanoma compared with slight nevus enlargement. Additionally, nevus that transforms into melanoma often displays clinical risk factors predictive of transformation.⁴ In some cases, however, differentiation of benign growing nevus from transformation into melanoma can be challenging.

When faced with a patient with a melanocytic choroidal lesion, the clinician should consider risk factors predictive of transformation into melanoma. These factors can be remembered by the mnemonic “To find small

ocular melanoma using helpful hints daily” (TFSOM-UHHD), which represents lesion Thickness greater than 2 mm, subretinal Fluid, Symptoms, Orange pigment, tumor Margin within 3 mm of the optic disc, Ultrasonographic Hollowness, lack of a Halo, and lack of overlying Drusen (Table 1).⁴ A free website, the Wills Ocular Melanoma Calculator (www.OcularMelanomaCalculator.com; see QR code inset), has been developed to assist physicians and patients with rapid estimation of risk of choroidal nevus transformation into melanoma based on published literature. This website allows input of factors with a single click and with immediate calculation of risk.

Our patient had 3 risk factors including margin of the tumor less than 3 mm from the optic disc, lack of drusen, and halo absence. Hence, this nevus will be monitored with long-term follow-up.

SUMMARY

We report a case of a slow growing choroidal nevus in the eye of a young adult. This case emphasizes that slow growth of choroidal nevus, particularly in younger patients, is not necessarily a sign of malignant transformation. Careful observation long-term, however, is advised. ■

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