Some benign choroidal nevi can demonstrate minimal and slow enlargement without becoming malignant.

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Choroidal nevus is a benign melanocytic tumor that most frequently occurs in the Caucasian population. In an analysis of choroidal nevus in the US adult population using data from the National Health and Nutrition Examination Survey, the overall prevalence of nevus was 4.7%. Increasing age correlated with increasing prevalence, as 4.7% of individuals aged 40 to 49 years and 7.5% of those older than 80 years demonstrated choroidal nevus.

Patients of Caucasian heritage showed the highest prevalence of choroidal nevus at 5.6%, followed by Hispanics at 2.7%, and African-Americans at 0.6% of the related population. Of note, there was no association of choroidal nevus with skin melanoma or other cancers.

The clinical features of choroidal nevus have been described in a large cohort of 3,422 consecutive eyes. In that series, the mean basal tumor diameter was 5.6 mm in younger individuals (≤20 years), 4.7 mm in middle-aged adults (21-50 years), and 5.7 mm in older adults (>50 years). Related features of intrinsic pigmentation (89%, 74%, and 77% in those age groups respectively) and subretinal fluid (11%, 15%, and 9% in those age groups respectively) were noted. Several features, including nevus thickness, nevus multiplicity, and overlying drusen, were significantly increased with age. The mean tumor thickness was 1.2 mm in younger individuals, 1.5 mm in middle-aged adults, and 1.6 mm in older adults. Nevus multiplicity was 2% in younger individuals, 8% in middle-aged adults, and 10% in older adults. Overlying drusen were detected in 11% of younger individuals, 40% of middle-aged adults, and 58% of older adults.

In general, choroidal nevus remains relatively stable over time with a small potential for growth into melanoma. However, there are instances in which a choroidal nevus might demonstrate minimal enlargement over a long period of time and still display nevus behavior with no potential for metastasis. In this article we describe a patient with a choroidal nevus that showed minimal enlargement over 13 years.

CASE REPORT
A 65-year-old Caucasian woman with hypertension was referred in 2003 for evaluation of an asymptomatic choroidal mass in the right eye (OD). Visual acuity was 20/25 OD and 20/20 in the left eye (OS). Intraocular pressure was normal in each eye (OU), and there was mild nuclear sclerosis of the lens OU.

Funduscopy revealed three small, flat choroidal freckles along the inferotemporal equator OS. The fundus OD demonstrated an inferonasal pigmented choroidal nevus measuring 7 mm in basal dimension and 2.2 mm in thickness on ultrasonography. No subretinal fluid or orange pigment (lipofuscin) was seen. Additionally, the lesion displayed overlying drusen, which is a sign of chronicity.
On ultrasonography, the mass demonstrated high internal reflectivity on A-scan and dense echogenicity on B-scan, consistent with choroidal nevus. Given these findings and the low risk for transformation into malignant choroidal melanoma, a decision was made to observe. The patient was followed on a 6-month, then 1-year basis without observed tumor change.

On the most recent examination, 13 years after initial diagnosis, the nevus measured 8 mm in basal dimension and 2.5 mm in thickness on ultrasonography. When fundus images from 2005 to 2016 were compared, mild enlargement of approximately 1 mm over 11 years was noted (Figure). This raised a question about when one should be concerned that growth of a nevus represents malignant transformation. There may not be an easy answer, but below are some of our thoughts based on scientific evidence and experience.

DISCUSSION

Most clinicians believe that, if a choroidal nevus demonstrates photographically evident growth, there is concern for malignant transformation. This premise is based on the understanding that choroidal nevus generally remains stable throughout adult life. Furthermore, large clinical studies documenting choroidal nevus transformation into melanoma have identified features indicative of potential risk for metastasis. Risk factors for detection of choroidal melanoma at the earliest point, generally when the tumor is similar to the size of a nevus, have been identified. These factors assist in the assessment of the potential for nevus transformation into melanoma, and they include thickness of 2 mm or more, presence of subretinal fluid, symptoms such as metamorphopsia and photopsia, orange pigment, margin within 3 mm of the optic disc, ultrasonographic hollowness, absence of halo, and absence of drusen. The presence of three or more of these factors predicts a more than 50% chance for tumor growth within 5 years.

Not all nevi with enlargement prove to be melanoma. In general, those that demonstrate minimal enlargement of 1.0 mm to 1.5 mm at a slow rate over 10 years or longer typically represent benign growth of the nevus without malignant behavior. These lesions tend to display other chronic features such as drusen and retinal pigment epithelium alterations, and they rarely show other risk factors such as subretinal fluid or orange pigment. By comparison, those that demonstrate enlargement over a short period of 5 years or less and that have related factors of subretinal fluid and orange pigment tend to represent melanoma.

In a long-term study of 284 choroidal nevi documented with fundus photography at each visit, it was found that 89 (31%) demonstrated slight enlargement of approximately 1 mm or less over a mean of 15 years of follow-up. In that series, nevus enlargement was more commonly detected in patients younger than 40 years (54%) compared with patients older than 60 years (19%, P < .001). Thus, in the absence of other risk factors, some benign choroidal nevi can demonstrate minimal and slow enlargement without true malignant transformation, as in the case discussed here.

Others have documented slow enlargement of choroidal nevus. In 1977, Gass reported enlarging choroidal nevus in two teenagers. Maclwaine et al showed histopathologic evidence of benign nevus in a growing pigmented choroidal mass of a 52-year-old woman following enucleation. Elner et al demonstrated benign spindle nevus on histopathology of the enucleated eye of a 47-year-old patient with documented enlarging pigmented choroidal tumor.
Additionally, the Beijing Eye Study revealed growth of presumed choroidal nevus during 5 years of follow-up in 5.3% of adults aged 40 years or older.\textsuperscript{11}

**MELANOMA OR NEVUS? CHECK TIME AND GROWTH**

In summary, an enlarging choroidal nevus could potentially represent a life-threatening melanoma, but it could also represent a benign nevus. If the time interval is a short period of months to a few years, the lesion could represent melanoma, but if the growth occurs over more than 5 to 10 years, it could represent benign enlargement of the nevus. Likewise, if the amount of growth is 1 mm or less, then the lesion is likely a nevus, whereas growth of 1 mm or more would be more suspicious for melanoma. Assessment of risk factors is critical.