Incidental Unilateral Choroidal Osteoma in Middle-aged Woman: A Case Report

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ABSTRACT

Choroidal osteoma is a rare, benign, ossifying tumor of the choroid that predominantly affects healthy young women. We report a 40-year-old woman who presented with intermittent photopsia and ocular irritation in the left eye. Bilateral fundus examination incidentally revealed an asymptomatic choroidal lesion in the right eye, while the left eye showed no fundus abnormalities. Diagnosis was established based on characteristic clinical and multimodal imaging findings, including fundus examination, ultrasonography, optical coherence tomography, optical coherence tomography angiography, and fundus autofluorescence. Imaging demonstrated features consistent with choroidal osteoma without evidence of choroidal neovascularization or other vision-threatening complications. The patient was managed conservatively with observation and scheduled follow-up. This case highlights the importance of recognizing the characteristic clinical and multimodal imaging features of choroidal osteoma, even when asymptomatic, and emphasizes long-term surveillance for early detection of complications that may threaten visual function.

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INTRODUCTION

Choroidal osteoma is a rare, benign intraocular tumor of the choroid composed of mature cancellous bone. It commonly presents as an unilateral, slightly elevated yellow-white lesion with irregular margins, predominantly affecting otherwise healthy women in the second and third decades of life.[1,2] It is most commonly located in the juxtapapillary or peripapillary region and may extend into the macula.[3] We hereby present a case of a middle aged female presenting with ocular irritation and flashes in her left eye, later diagnosed to have a choroidal osteoma in her right eye incidentally during ophthalmic evaluation by multimodal imaging highlighting its role in establishing the diagnosis.

CASE REPORT

A 40-year-old woman presented to the ophthalmology department, with complaints of intermittent flashes and ocular irritation in her left eye for three days. There was no history of diminished vision, metamorphopsia, or floaters. Her family, medical, surgical, and drug histories were otherwise unremarkable. On examination, unaided visual acuity was 6/6 in the right eye (RE) and 6/9 in the left eye (LE). Best-corrected visual acuity was 6/6 (N6) in the RE and 6/6 (N6) in the LE. Anterior segment examination of both eyes was within normal limits, with clear corneas, normal anterior chamber depth, and normal pupillary reactions. Dilated fundus examination of the right eye revealed a solitary, well-circumscribed, slightly elevated, juxtapapillary yellowish-orange choroidal lesion located inferior to the optic disc, measuring approximately 3.8 x 3.1 mm four-disc diameters in size (Figure 1). The lesion had distinct margins with prominent overlying retinal vessels and extended toward the inferior retina. The optic disc appeared healthy with a cup-to-disc ratio of 0.2. Fundus examination of the left eye was unremarkable, with a healthy optic disc and a cup-to-disc ratio of 0.2.

Multimodal imaging was performed for further evaluation. B-scan ultrasonography of the right eye demonstrated a highly reflective choroidal mass with marked posterior acoustic shadowing, suggestive of calcification (Figure 2). A-scan demonstrated a high-amplitude echo with high internal reflectivity. Optical coherence tomography (OCT) showed elevation of the retinal pigment epithelium corresponding to the lesion without evidence of subretinal fluid, retinal edema, or choroidal neovascular membrane (Figure 3). Optical coherence tomography angiography (OCTA) showed no evidence of an abnormal choroidal neovascular network (Figure 4). Fundus autofluorescence (FAF) imaging demonstrated areas of hyper autofluorescence with scattered bright foci over the lesion (fig. 5). Based on the characteristic clinical appearance and multimodal imaging findings, including fundus examination, OCT, OCTA, fundus autofluorescence, and ultrasonography, a diagnosis of unilateral choroidal osteoma of the right eye was established. Fluorescein angiography and indocyanine green, being an invasive procedure, were not done as non-invasive OCTA was already done. As visual acuity was preserved and

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no sight-threatening complications were identified, the patient was managed conservatively with observation and periodic follow-up to monitor for tumor progression, decalcification, and the development of choroidal neovascularization. In the left eye, the peripheral retina, vitreous, and OCT were examined, however, no cause was found. The patient was advised to return after 6 months for follow-up assessment. During this time, fundus examination and multimodal investigations will be done to look for extent of lesion, neovascularization, retinal pigment epithelium atrophy, and subretinal fluid. However, she has not yet returned for the scheduled visit.

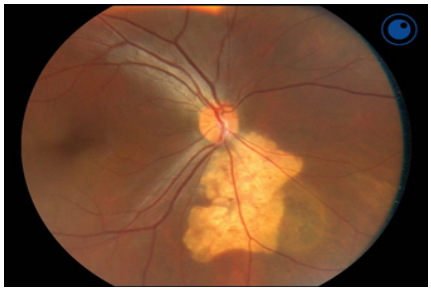


Figure 1. Color fundus photograph of the right eye showing a well circumscribed yellowish-orange juxtapapillary choroidal lesion inferior to the optic disc with overlying retinal vessels

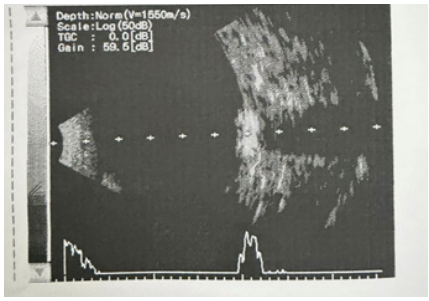


Figure 2. B-scan ultrasonography of the right eye demonstrating a highly reflective choroidal lesion with prominent posterior acoustic shadowing corresponding to calcification

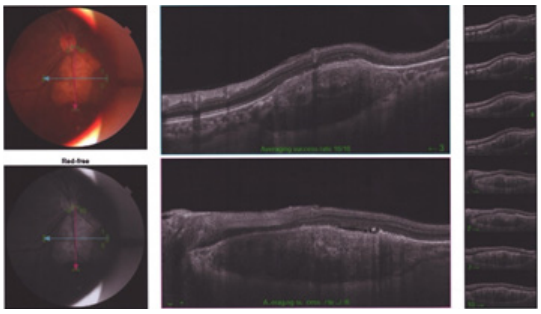


Figure 3. Optical coherence tomography (OCT) of right eye showing elevation of the RPE overlying the lesion without subretinal fluid or intraretinal edema

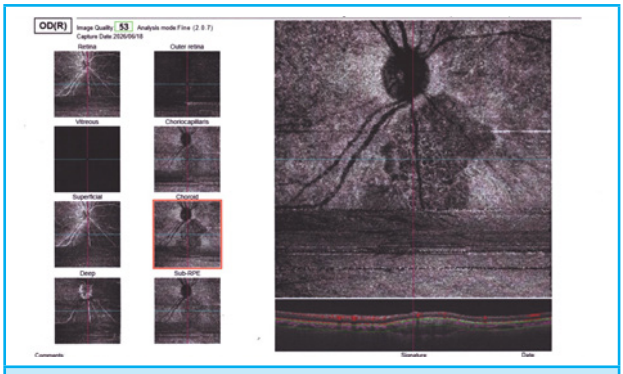


Figure 4. Optical coherence tomography angiography (OCTA) of right eye showing no evidence of CNV

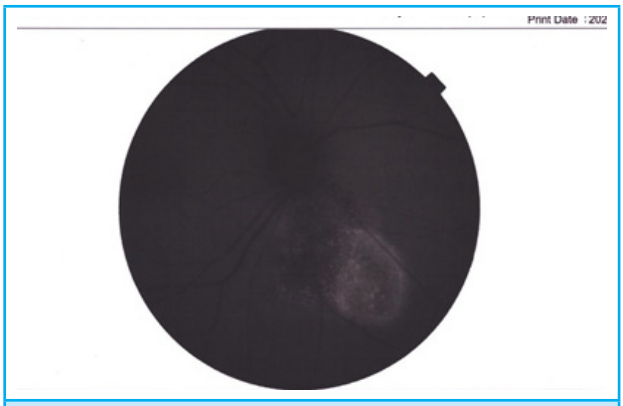


Figure 5. Fundus autofluorescence (FAF) imaging showing areas of increased autofluorescence with scattered hyperautofluorescence foci overlying the lesion

DISCUSSION

Choroidal osteoma typically presents as a deep orange-yellow lesion with well-defined geographic or scalloped margins, often accompanied by branching blood vessels over the surface of the tumor. The characteristic color of the lesion is influenced by the degree of depigmentation of the overlying retinal pigment epithelium (RPE).[2] The clinical appearance of choroidal osteoma changes over time, with early lesions exhibiting an orange-red color and more advanced lesions developing a yellowish coloration due to progressive depigmentation of the overlying RPE.[4] Patients with choroidal osteoma may remain asymptomatic. In our case, a middle-aged female presented with ocular irritation and photopsia in the left eye, whereas the choroidal osteoma was detected in the right eye. This presentation differs from most published literature, where patients present with decreased visual acuity, metamorphopsia, or visual field defects that correspond to the location of the lesion attributable to the eye harboring the tumor. Visual symptoms are usually related to retinal pigment epithelium degeneration, photoreceptor loss, tumor decalcification, or secondary choroidal neovascularization.[5] In contrast, our patient had no symptoms attributable to the affected eye, making the diagnosis an incidental finding.

It occurs predominantly in young adult women. It has led to a hypothesis regarding hormonal influences; however, a definitive

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hormonal or endocrine association has not been established. Although most cases are diagnosed after puberty, it has also been reported in prepubertal girls and in male.[2,6,7] Although choroidal osteoma predominantly affects young adult women, our patient is 40 years old, representing a relatively older age at presentation. The unilateral involvement and female sex remain consistent with the recognized demographic characteristics of the disease.

The diagnosis of choroidal osteoma is primarily based on clinical examination. Fundoscopic examination typically reveals a well demarcated orange-yellow lesion. Ancillary investigations used to confirm the diagnosis and assess the lesion include fluorescein angiography, FAF, ultrasonography (A scan and B scan), computed tomography (CT), magnetic resonance imaging (MRI), and OCT. Owing to its calcified composition, choroidal osteoma demonstrates high acoustic reflectivity with posterior acoustic shadowing on ultrasonography. On A-scan, it produces a high-amplitude echo spike. Ultrasonography remains an important diagnostic modality, as calcified lesions characteristically exhibit high acoustic reflectivity with posterior acoustic shadowing.[7] Our findings were also comparable to those described in the literature with imaging characteristics supporting the diagnosis of choroidal osteoma and helping exclude other choroidal lesions.

The differential diagnosis included choroidal melanoma, hemangioma, metastasis, granuloma, sclerochoroidal calcification, and choroidal nevus. Choroidal melanoma classically appears as a dome-shaped or mushroom-like lesion and may show subretinal fluid or orange pigment, while choroidal hemangioma appears as a smooth, orange-red, highly reflective lesion without any posterior acoustic shadowing. Choroidal metastasis commonly appears as a cream-yellow plateau-like lesion and may show subretinal fluid or systemic malignancy. Choroidal granulomas are mostly caused by infections or inflammation, and sclerochoroidal calcification classically occurs in the mid-peripheral fundus and presents as yellow-white lesions. Choroidal nevus is usually small and pigmented with minimal elevation. In the current case, the presence of a well-defined, yellowish-orange lesion juxtapapillary along with posterior acoustic shadowing due to calcification and the imaging characteristics made the diagnosis of choroidal osteoma likely.

Visual prognosis in choroidal osteoma depends on several factors, including the location of the tumor, the degree of decalcification, overlying retinal pigment epithelium (RPE) atrophy, the presence of choroidal neovascularization (CNV), persistent subretinal fluid, and subretinal hemorrhage.[5,8] Unlike described in different literature, our patient showed no evidence of complications or significant visual impairment in the affected eye, allowing conservative management with regular follow-up. There is no established treatment for an uncomplicated choroidal osteoma. Management is generally individualized according to visual symptoms, tumor activity, decalcification, subretinal fluid, and the presence of CNV. Subretinal neovascularization secondary to choroidal osteoma has been managed with laser photocoagulation.[9] Anti-VEGF therapy appears to be beneficial, although the response may be gradual, and prolonged treatment is often required to achieve optimal visual outcomes and maintain visual function.[10]

This case highlights the importance of thorough bilateral fundus examination and multimodal imaging and describes choroidal osteoma as an incidental finding in the asymptomatic eye during evaluation of symptoms in the fellow eye.

CONCLUSION

Choroidal osteoma should be considered in the differential diagnosis of a characteristic calcified choroidal lesion even in asymptomatic patients. Thorough bilateral fundus examination and multimodal imaging are essential for diagnosis and baseline assessment. Long- term surveillance is important because decalcification, RPE degeneration, subretinal fluid, and CNV may develop during the course of the disease.

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Conflict of Interest: None.

Consent: JNMA Case Report Consent Form was signed by the patient and attached with the patient's chart.

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