ENLARGEMENT OF SCLEROCHOROIDAL CALCIFICATIONS: MULTIMODAL IMAGING UPDATE

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Purpose: To report the multimodal imaging and enlargement of sclerochoroidal calcifications over a 10-year period.

Methods: Case report of a 74-year-old white man who presented for routine follow-up and was found to have yellow chorioretinal lesions in the right eye.

Results: Multimodal imaging was performed and confirmed sclerochoroidal calcifications. Comparison of fundus photography over a 10-year period demonstrated growth of preexisting lesions and the development of new lesions in the right eye.

Conclusion: Over time, this patient developed new sclerochoroidal calcifications and enlargement of preexisting calcifications. We, therefore, recommend regular follow-up with periodic multimodal imaging for these patients.

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Sclerochoroidal calcifications represent deposits of calcium pyrophosphate in the sclera and/or choroid, typically in elderly, white individuals.1,2 Deposits are visible as irregular, yellow chorioretinal lesions,3 commonly identified superotemporally near the vascular arcade.4 The etiology for these deposits is idiopathic in most cases but can be associated with abnormal calcium–phosphorus metabolism.5 These lesions are commonly incidental findings in asymptomatic individuals. Traditionally, they are believed to remain stable and do not increase in size over time.6 We describe a case of sclerochoroidal calcification with the unusual development of new lesions and the enlargement of existing calcifications over the course of 10 years.

Case Report

A 74-year-old white man presented for routine follow-up after a successful macular hole repair in the left eye 13 years ago. Vision was stable in both eyes with no complaints in the right eye. An ocular history was significant for bilateral pseudophakia, myopic degeneration, and glaucoma. A medical history was significant for colon cancer 15 years ago, hyperlipidemia and allergic rhinitis well controlled with atorvastatin and Nasonex. There was no history of trauma, renal disease, or endocrine abnormalities. On examination, his best-corrected visual acuity was 20/25 and 20/125 in his right

Fig. 1. Optos fundus photography of the right eye shows yellow superotemporal lesions.
and left eyes, respectively. Anterior segment examination was unremarkable in both eyes.

Posterior segment evaluation showed yellow lesions superotemporally in the right eye (Figure 1). No lesions were seen in the left eye. Tilted optic disks were seen bilaterally. Fundus autofluorescence showed hyperautofluorescent areas superotemporally corresponding to the lesions on fundus photography (Figure 2). Spectral domain optical coherence tomography of the macula was unremarkable in both eyes. Enhanced depth imaging spectral domain optical coherence tomography through these lesions revealed an elevated rocky-rolling contour caused by scleral masses with associated overlying choroidal thinning (Figure 3). On B scan, the lesions appeared hyperreflective, mildly elevated, and with posterior shadowing, consistent with calcifications (Figure 4). No lesions were seen in the left eye on B scan.

After reviewing previous imaging performed in this patient, it was noted that these sclerochoroidal calcifications in the right eye had been initially detected in 2006. Over the subsequent 10 years, new lesions had appeared and previously identified lesions had increased in size (Figure 5). This was further confirmed on B scan.

Laboratory workup was performed on this patient to rule out calcium-phosphorus–related disorders that are occasionally associated with sclerochoroidal calcifications. No abnormalities were detected in this patient, making the etiology likely idiopathic.

Discussion

The yellow lesions seen superotemporally in this case are typical of sclerochoroidal calcifications. Enhanced depth imaging spectral domain optical coherence tomography showed rocky-rolling topography from scleral lesions with overlying choroidal thinning.3,7 With sclerochoroidal calcifications, the sclera can assume a flat, rolling, rocky-rolling, or table mountain contour. Large lesions can compress the overlying choroid and retina.1 In some cases, optical coherence tomography can also demonstrate outer nuclear layer thinning, external limiting membrane disruption, inner segment–outer segment junction absence, subretinal fluid, retinal pigment epithelium changes, and/or pigment epithelial detachment.4 Unlike choroidal osteoma, amelanotic nevus or melanoma, lymphoma, granuloma, or metastases, these lesions originate in the sclera.4

Sclerochoroidal calcifications are typically asymptomatic and affect elderly white individuals.4 Calcium pyrophosphate is deposited in the postequatorial sclera and/or choroid, commonly superotemporally. Fundus autofluorescence shows homogenous hyperautofluorescence, and B scan ultrasonography shows solid lesions with posterior shadowing.4,5

Although these calcifications are typically idiopathic, they can be associated with abnormal calcium–phosphorus metabolism, such as hyperparathyroidism, pseudohypoparathyroidism, vitamin D intoxication, sarcoidosis, hypophosphatemia, calcium pyrophosphate dehydrate deposition disease, chronic renal failure, and renal tubular hypokalemic metabolic alkalosis syndromes (such as Bartter and Gitelman syndromes).2 These disorders were ruled out in this patient with systemic testing.

A study by Shields et al6 examined 179 eyes in 118 patients with a mean follow-up of 45 months. The authors found that sclerochoroidal calcifications were unilateral in 57 (48%) patients and bilateral in 61 (52%) individuals. More importantly, no eyes showed enlargement during follow-up. No new lesions were detected over time in this large sample size. However, Boutboul et al8 reported growth over 24-year follow-up in a 69-year-old man with sclerochoroidal calcifications in both eyes in the setting of familial chondrocalcinosis. We report another rare case of sclerochoroidal calcification enlargement that progressively expanded over a 10-year period of observation, with subtle changes noted as early as 1-year follow-up.

Given the possibility for enlargement of these lesions and the rare development of choroidal
neovascularization associated with these calcifications, we recommend regular follow-up and imaging every couple years.

**Conclusion**

Although rare, sclerochoroidal calcifications can accumulate and increase in size over time. For this reason, we recommend regular follow-up of these patients.

**Key words:** sclerochoroidal calcifications, multimodal imaging.

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