Case Report

Recognizing Amiodarone-Induced Cornea Verticillata: A Case Report of Bilateral Cataract and Ocular Drug Deposition

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Abstract

Amiodarone is a widely prescribed class III antiarrhythmic agent known for its efficacy in managing refractory arrhythmias. However, it is also associated with several ocular adverse effects, the most characteristic being cornea verticillata. This benign, whorl-like epithelial deposition typically spares visual acuity but warrants clinical awareness.We report the case of a 73-year-old female with rheumatic heart disease and atrial fibrillation on chronic amiodarone therapy (200 mg daily for nine months), who presented with progressive bilateral diminution of vision over five months. Ophthalmic evaluation revealed bilateral cornea verticillata along with grade 3 nuclear sclerosis and posterior subcapsular cataract. Anterior segment optical coherence tomography (AS-OCT) demonstrated hyperreflective deposits localized to the corneal epithelium, confirming the diagnosis of amiodarone-induced keratopathy. The patient underwent uneventful right eye cataract surgery with posterior chamber intraocular lens implantation in the right eye, resulting in satisfactory postoperative visual recovery.This case underscores the need for ophthalmologists to recognize amiodarone-induced corneal changes and differentiate them from other causes of visual decline. While cornea verticillata itself is typically asymptomatic and reversible, coexisting lenticular opacities may substantially impair vision. Close interdisciplinary collaboration between ophthalmologists and cardiologists is crucial for optimal patient management.

Keywords : Amiodarone, Cornea verticillata, Drug-induced keratopathy, Vortex keratopathy

Introduction

Amiodarone hydrochloride is a potent class III antiarrhythmic drug used to manage life-threatening ventricular and supraventricular arrhythmias. Despite its therapeutic benefit, amiodarone is associated with multiple systemic and ocular adverse effects involving the thyroid, liver, lungs, and eyes.[1]

Among ocular manifestations, corneaverticillata characterized by fine, golden-brown, whorl-like epithelial deposits is the most frequent, occurring in approximately 70–100% of patients on long-term therapy.[2,3] These deposits appear within one to four months of treatment initiation, following the centripetal migration pattern of corneal epithelial cells.[3]

The pathogenesis involves the accumulation of drug–lipid complexes within lysosomes, leading to corneal epithelial phospholipidosis. [4,5] Although typically asymptomatic, some patients experience halos, photophobia, or mild blurring. Deposits are bilateral and reversible upon discontinuation, resolving within several months.[2,3]

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We report a case of amiodarone-induced cornea verticillata coexisting with visually significant bilateral cataract, emphasizing the importance of comprehensive ophthalmic evaluation in patients receiving chronic amiodarone therapy.

Case report

A 73-year-old female presented to our ophthalmology outpatient clinic with complaints of gradually progressive, bilateral diminution of vision over five months. She also reported mild ocular discomfort, discharge, and photophobia. There was no history of redness, itching, ocular surgery, or trauma.

Her systemic history included diabetes mellitus, hypertension, coronary artery disease, and rheumatic heart disease with moderate mitral stenosis and regurgitation. She had been on oral amiodarone 200 mg once daily in the lastnine months for atrial fibrillation.

On examination, best-corrected visual acuity was 3/60 in the right eye and 6/60 in the left eye. Intraocular pressures were 15.3 mmHg (right eye) and 16.1 mmHg (left eye) by non-contact tonometry.

Slit-lamp biomicroscopy revealed bilateral cornea verticillata—golden-brown whorl-like epithelial deposits in a vortex pattern, predominantly inferiorly and extending toward the visual axis (Figure 1). Both eyes demonstrated grade 3 nuclear sclerosis with posterior subcapsular cataract. Fundus was faintly visible due to lenticular opacity.

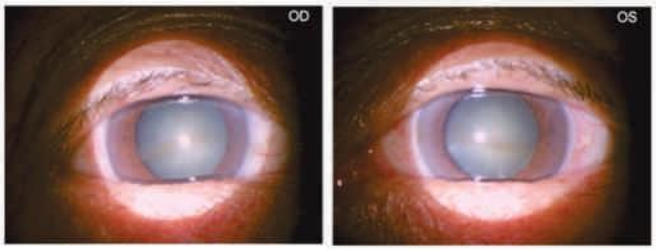

Figure 1 : Slit-lamp photograph demonstrating bilateral cornea verticillata with characteristic golden-brown whorl-like deposits in the inferior corneal epithelium extending toward the visual axis, consistent with Stage III amiodarone keratopathy.

AS-OCTrevealed hyper reflective, band-like epithelial deposits confined to the basal epithelial layers, sparing the stroma and endothelium, consistent with drug-induced vortex keratopathy (Figure 2).

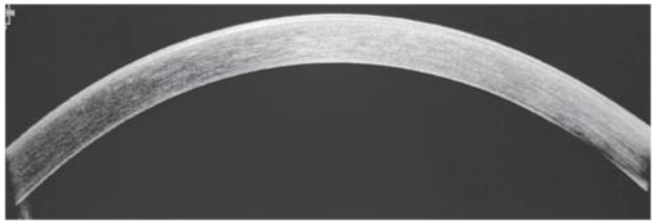

Figure 2 : Anterior Segment Optical Coherence Tomography (AS-OCT) image of the right eye showing hyperreflective epithelial-level deposits consistent with amiodarone-induced vortex keratopathy, with preservation of the stromal and endothelial architecture.

A diagnosis of bilateral grade 3 nuclear sclerosis with posterior subcapsular cataract and amiodarone-induced cornea verticillata was made. Following cardiology clearance, the patient underwent cataract surgery with posterior chamber intraocular lens implantation in the right eye. The postoperative course was uneventful, with clear media and satisfactory visual rehabilitation (Figure 3).

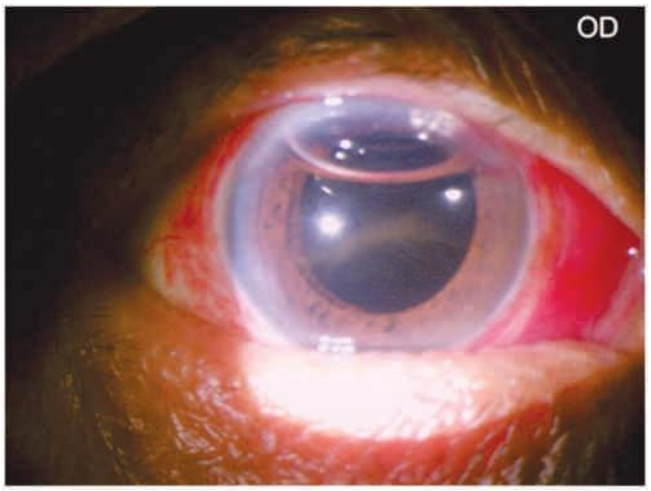

Figure 3 : Postoperative day 1 slit-lamp photograph of the right eye showing well-centered posterior chamber intraocular lens with clear media. Note persistent corneal verticillata deposits, which did not affect surgical outcome or visual rehabilitation.

Discussion

Amiodarone-induced cornea verticillata is a common, dose- and duration-dependent manifestation of chronic therapy, observed in up to 100% of long-term users.[2,3,6] The deposits typically appear after one to six months of therapy.[2,7] Our patient demonstrated typical findings nine months post-initiation, consistent with this timeline. Based on the extent and involvement of the visual axis, she exhibited Stage III keratopathy.[6]

Amiodarone's amphiphilic nature allows it to cross cell membranes and accumulate within lysosomes, where it forms lipid–drug complexes resistant to degradation.[4,5] Electron microscopy studies show lamellar inclusions within corneal epithelial lysosomes and keratocytes, reflecting direct drug accumulation.[3,4,8] The characteristic vortex pattern corresponds to centripetal migration of epithelial cells from the limbus and anterior migration of basal cells.[3,5]

While most cases are asymptomatic, some patients may experience halos, glare, or blurred vision. Approximately 1.4–40% of patients report colored halos around lights.[9,10] In this case, visual deterioration was primarily due to cataract rather than corneal involvement. Amiodarone-associated lens changes often anterior subcapsular opacities are reported in up to 60% of patients and can persist despite drug cessation.[9]

Optic neuropathy is a rare but potentially serious amiodarone-related complication, presenting with disc edema and field defects in 1.3–1.7% of cases.[9] Retinal involvement is

exceedingly uncommon. The differential diagnosis for vortex keratopathy includes Fabry disease and drug-induced causes (chloroquine, hydroxychloroquine, tamoxifen, indomethacin, phenothiazines).[5]

Management should balance ocular findings against cardiac indications. Corneal deposits alone seldom justify cessation of amiodarone, as they are reversible and rarely visually significant.[2,3,9] In this case, successful cataract surgery was performed without discontinuing the drug, underscoring the safety of ocular intervention with appropriate interdisciplinary coordination.

Conclusion

Amiodarone-induced cornea verticillata represents a benign but highly characteristic ocular manifestation of chronic therapy. While visual acuity is usually preserved, coexistent cataracts or optic neuropathy can contribute to visual impairment. Comprehensive ophthalmic evaluation is vital in all patients receiving long-term amiodarone to distinguish reversible corneal changes from other vision-limiting conditions.

This case reinforces the value of collaborative care between ophthalmologists and cardiologists to ensure both cardiac safety and visual rehabilitation.

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