Case Report

Bilateral Horizontal Vogt's Striae: A Case Report

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Abstract

Purpose: This case report presents a rare instance of bilateral horizontal Vogt's striae in a patient with keratoconus (KCN).
Case Report: A 30-year-old male presented with progressive blurred vision and a suspected family history of KCN. Clinical examination revealed high astigmatism, a scissor reflex on retinoscopy, and fine horizontal striae in the posterior stroma and Descemet's membrane of both corneas, resembling Vogt's striae. Pentacam imaging confirmed the diagnosis of KCN, demonstrating central corneal thinning, elevated front and back elevation maps, and high dioptric power points in the curvature map of both eyes. Due to intolerance to rigid gas permeable (RGP) lenses, deep anterior lamellar keratoplasty (DALK) was performed as the definitive treatment.
Conclusion: This case highlights a rare bilateral presentation of horizontal Vogt's striae in KCN, an uncommon slit-lamp finding. The presence of these atypical stress lines may be attributed to mechanical stretching or corneal distortion induced by the cone.

Keywords: Bilateral; Horizontal; Vogt's Striae; Case.

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Introduction

Keratoconus (KCN) is a non-inflammatory ectatic disorder of the cornea that typically begins in early adulthood. It is characterized by progressive corneal protrusion and thinning, leading to irregular astigmatism and visual impairment [1]. Common clinical signs include the scissor reflex, Munson's sign, Fleischer ring, Vogt's striae, and Rizzuti's sign [2]. Vogt's striae are fine vertical lines found in the stroma and Descemet's membrane of the cornea in patients with KCN. These lines are typically oriented vertically, though rare cases of horizontal Vogt's striae have been reported.

Case Report

This case report was approved by the institutional ethics committee. The patient gave written consent before the case being reported. A 30-year-old male was referred to the cornea clinic with a chief complaint of blurred vision that had persisted for several months and worsened in recent weeks. He had a suspected family history of KCN, as his mother was affected.

On examination, his uncorrected visual acuity (UCVA) was 4/20 (right eye) and 5/100 (left eye) on the Snellen chart, with both eyes exhibiting blurred vision. The best-corrected visual acuity (BCVA) was 30/50 in the right eye and 30/100 in the left eye. He exhibited a high astigmatic refractive error in both eyes. The refractive and keratometric data are presented in table 1.

A scissor reflex was detected in both eyes during retinoscopy. Slit-lamp examination revealed horizontal striae in the posterior stroma and Descemet's membrane of both corneas (Figure 1). These lines closely resembled Vogt's striae. No other abnormalities were detected in the anterior segment examination.

The intraocular pressure in both eyes was within the normal range; however, irregular mires were observed in both corneas using a Goldmann applanation tonometer. Funduscopy of both eyes showed no pathological findings. The combination of a family history of KCN, progressive refractive changes, and abnormal keratometric values strongly indicated the condition. The diagnosis was subsequently confirmed by topography and Pentacam imaging (Figure 2 and 3).

A notable and interesting finding in this patient was the presence of bilateral horizontal Vogt's striae.

The initial treatment plan involved rigid gas permeable (RGP) contact lens fitting.

Table 1: Patient's keratometric autorefractometry, refraction and present glasses data

Variable	OD	OS
H	58.75* 9	62.50*177
V	55.75*99	55.75* 87
Mean	57.25	59.25
Refraction	-11.00 -2.50 * 94	-10.75 -8.25 * 85
Present glasses	-10.00 -3.00 * 105	-10.00 -2.50 * 85
PD	62 mm	

OD: Right eye; OS: Left eye; H: Horizontal; V: Vertical; PD: Papillary distance

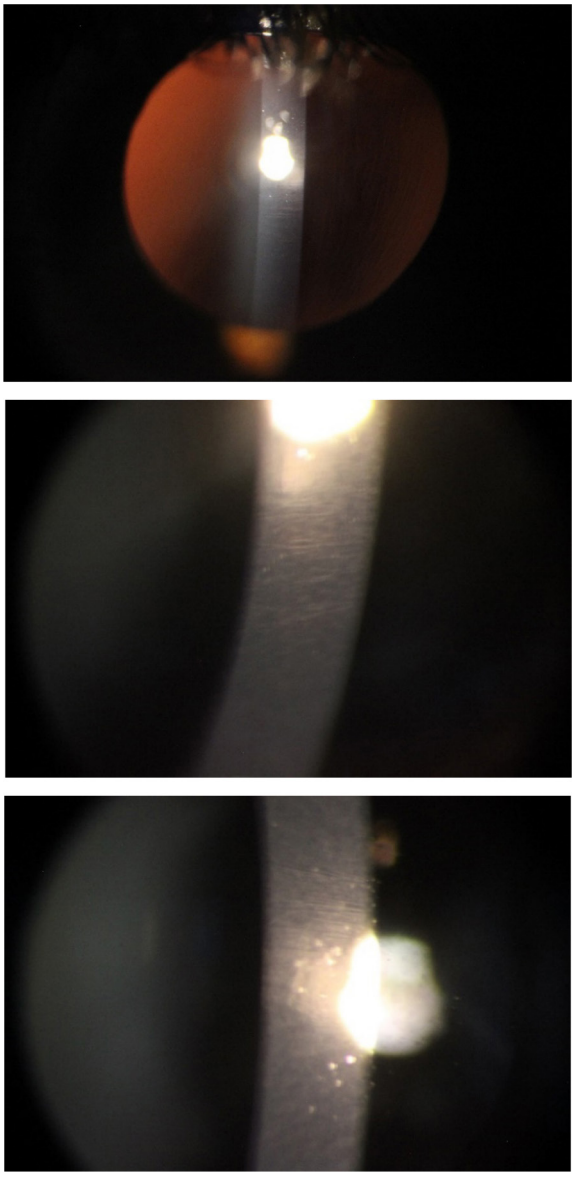

Figure 1: Slit-lamp photographs of the patient (slit illumination with magnification) showing fine horizontal lines are visible in the central cornea, located in the posterior stroma and Descemet's membrane, representing horizontal Vogt's striae

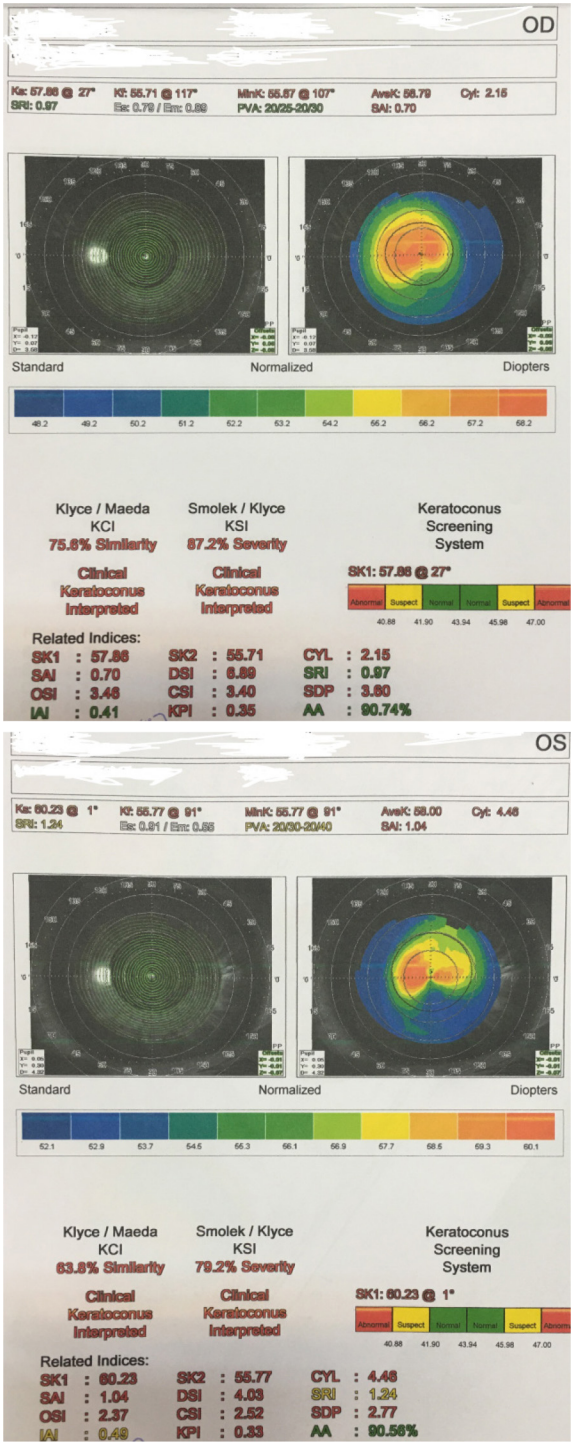

Figure 2: Topography imaging of the patient: central corneal thinning in both eyes, along with the coincidence of an elevated central 3 mm region

However, since the patient could not tolerate rigid gas permeable (RGP) lenses, deep anterior lamellar keratoplasty (DALK) was planned as the definitive treatment.

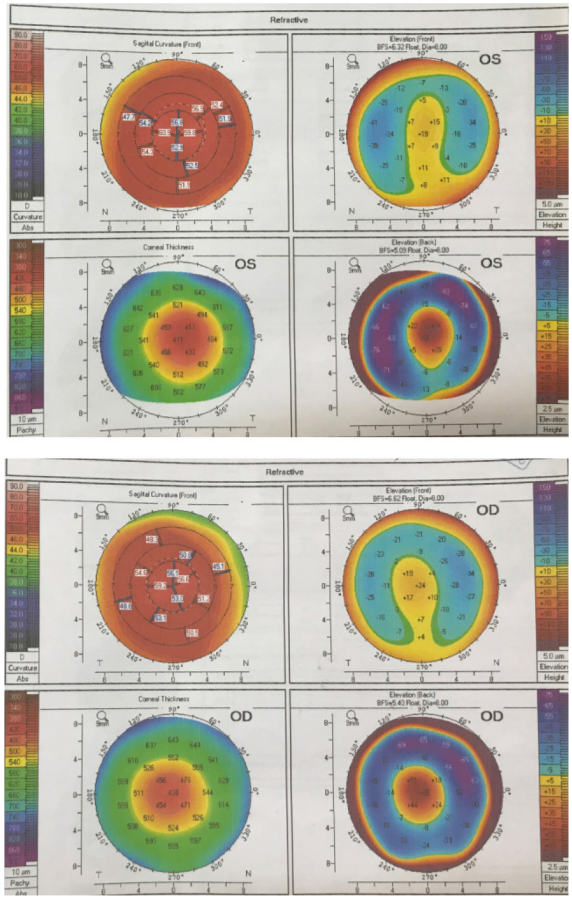

Figure 3: Pentacam imaging of the patient: the thinned area in the corneal thickness map aligns with high dioptric power points in the curvature map in both eyes

Discussion

KCN is an ectatic disorder of the cornea. The noninflammatory thinning of the corneal stroma leads to a cone-shaped protrusion, gradually impairing its optical properties. Vogt's striae are vertical lines in the deep stroma and Descemet's membrane that run parallel to the axis of the cone [3]. Approximately 35% of KCN patients have Vogt's striae in one eye, while 30% have them in both eyes. Fewer than five case reports have described horizontal stress lines in a single eye, and bilateral presentation is even rarer [4].

Mechanical stretching of endothelial cells and Descemet's membrane may play an important role in this phenomenon. Another possible explanation is corneal distortion caused by the cone. Some studies have hypothesized that the direction of these bands depends on the stress pattern of collagen fibers originating from the cone apex. Stress lines are usually oriented vertically because most cones are located inferior to the corneal center. On rare occasions, Vogt's striae can also appear horizontally due to the same mechanisms [5].

Conclusion

This case report highlights an exceptionally rare bilateral presentation of horizontal Vogt's striae in KCN with potential diagnostic significance. Recognizing such rare variations can enhance the understanding of KCN pathophysiology and aid in its clinical diagnosis and management.

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Footnotes and Financial Disclosures

Conflict of interest:

The authors have no conflict of interest with the subject matter of the present manuscript.