

Corneal calcium deposition as a plaque following collagen cross linking and vitamin D insufficiency

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Key words: Band shaped keratopathy, collagen cross linking, secondary hyperparathyroidism, vitamin D deficiency

A 32-year-old female presented with gradually increasing white spot in her right eye [Fig. 1a] since 18 months associated with ocular irritation. She had undergone bilateral corneal collagen cross-linking for keratoconus elsewhere [Figs. 2c and 3b], 10 years prior. She also gave a history of vitamin D deficiency and was on vitamin D supplements for the same.

Her best corrected visual acuity (BCVA) was 6/9, N6 in the right eye. Eye was quiet with a whitish opacity in the cornea involving the epithelial and subepithelial layers of the cornea. Underlying stromal haze was also noted. There was no associated neovascularization. Anterior segment OCT of the right eye showed hyper-reflective lesion involving the epithelium and the subepithelial layers [Fig. 2a]. Clinical diagnosis of corneal calcium deposition was made. Blood

investigations revealed Vitamin D insufficiency (28.7 ng/ml) with increased parathyroid hormone (73.78 pg/ml). Other parameters including serum calcium were within normal limits. She was diagnosed by the physician as Vitamin D insufficiency with secondary hyperparathyroidism. She was started on tablet Cholecalciferol 6000 IU after food once every 21 days.

She underwent right eye plaque removal with EDTA chelation under topical anesthesia.

At 6 months follow-up, her BCVA was 6/6p, N6, epithelium was intact with no calcium deposition [Figs. 1b, 2b and 3a]. She had normal serum 25(OH) Vit D (51.9 ng/ml) and parathyroid hormone (50.39 pg/ml).

Discussion

Corneal calcium deposition usually presents as greyish white band (band shaped keratopathy-BSK) with “swiss cheese” appearance in the interpalpebral area and is separated

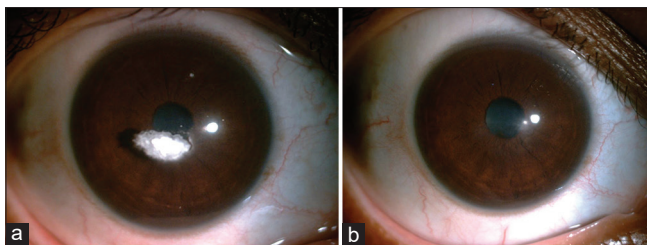


Figure 1: (a) Slit-lamp photograph of the right eye under diffuse illumination showing a quiet eye with white, elevated plaque in the pupillary area. (b) Slit-lamp photograph of the right eye under diffuse illumination at the final follow up showing intact corneal epithelium with stromal haze and no calcium deposition

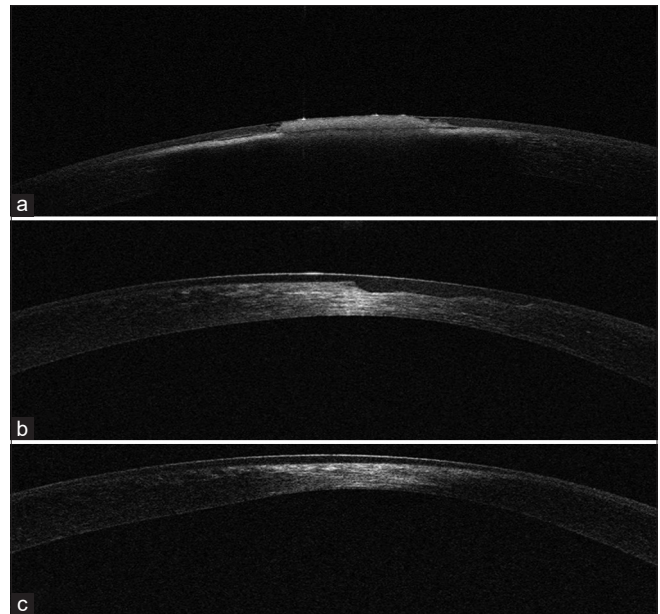



Figure 2: (a) AS OCT (Maestro, Topcon, Japan) of the right eye showing well localized, hyper-reflective lesion involving corneal epithelium and sub-epithelial tissue. (b) AS OCT (Maestro, Topcon, Japan) of the right eye at the final follow up visit showing intact epithelium and no calcium deposition. Stromal haze is noted. (c) AS OCT (Maestro, Topcon, Japan) of the left eye showing corneal thinning and stromal haze suggestive of previous collagen cross linking

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Quick Response Code:	Website: www.ijo.in
	DOI: 10.4103/ijo.IJO_2160_19

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Received: 27-Nov-2019

Revision: 04-Jan-2020

Accepted: 28-Jan-2020

Published: 25-Jun-2020

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Cite this article as: Shah SG, Shah GY. Corneal calcium deposition as a plaque following collagen cross linking and vitamin D insufficiency. Indian J Ophthalmol 2020;68:1441-2.

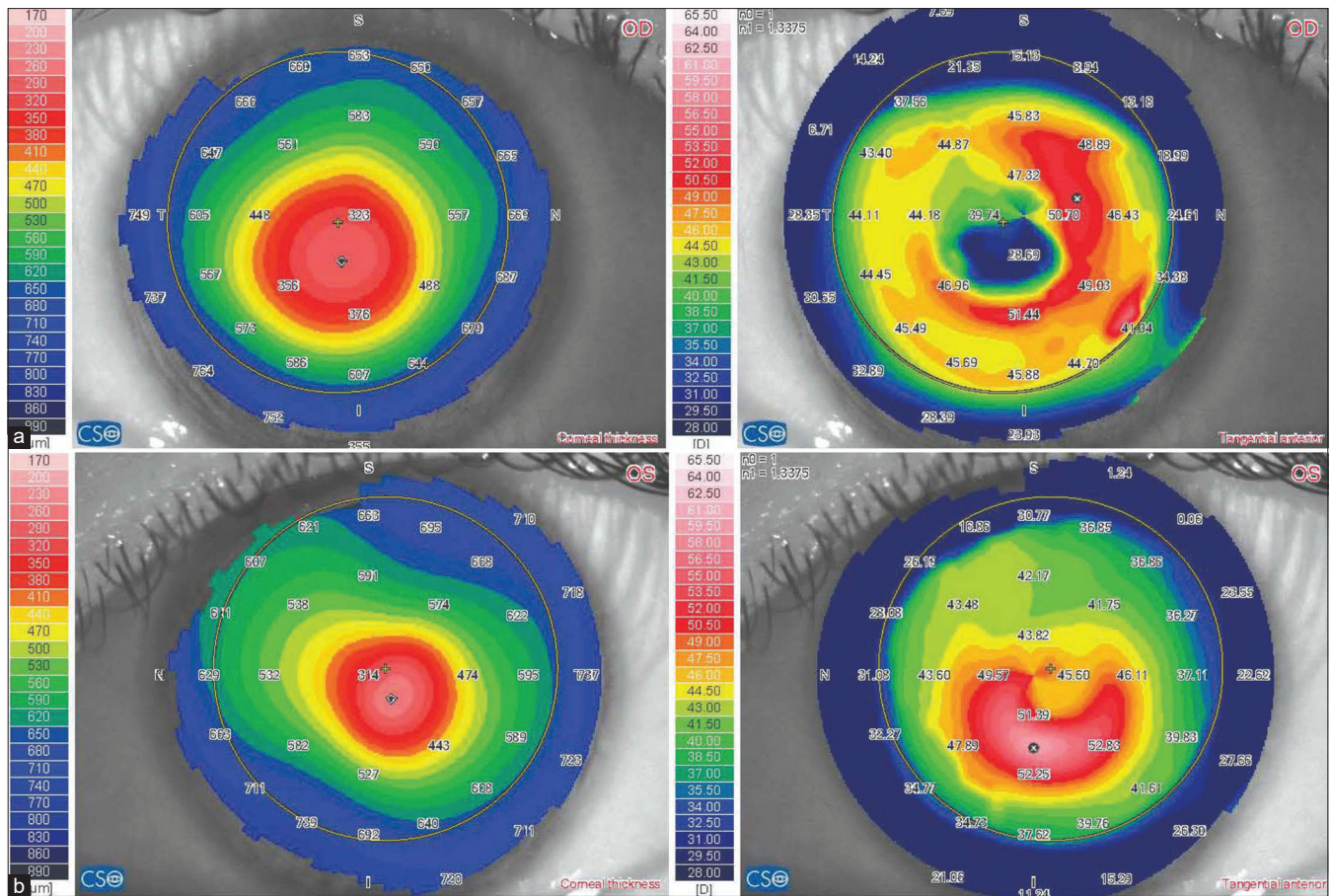


Figure 3: (a) Tomography (Sirius, CSO, Italy) of the right eye at the final visit showing central corneal thinning with flattening on the pachymetry and tangential anterior map. (b) Tomography (Sirius, CSO, Italy) of the left eye showing central corneal thinning with ectasia on the pachymetry and tangential anterior map suggestive of Keratoconus

from the limbus by a clear zone.^[1] It can occur secondary to abnormalities in metabolism of calcium, vitamin D, and parathormone.^[2,3] Our patient presented with normal serum calcium but with vitamin D insufficiency leading to secondary hyperparathyroidism and corneal calcium deposition which appeared as a plaque instead of BSK.

To conclude, patients presenting with white corneal plaque need to be investigated for abnormalities of vitamin D metabolism.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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