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# Conjunctival Intraepithelial Neoplasm III: A Case Report

***Abstract***—We report a case of conjunctival intraepithelial neoplasia type III (CIN III) in a patient presenting with lesion over the conjunctival and eventually invading the cornea. A 65-years-old lady presented with a whitish lesion over her right eye for one year. She noticed the lesion arising from supero-temporal conjunctiva and growing slowly over time, covering the upper part of the cornea. Right eye examination showed her best corrected visual acuity was 6/12. There was presence of a conjunctival lesion covering the superior half of the cornea with presence of feeding vessels. Excisional biopsy for the right conjunctival lesion was performed. Histopathological examination confirmed the diagnosis of conjunctival intraepithelial neoplasia (CIN) III. In view of malignant potential, CIN must be diagnosed promptly, differentiated carefully, and treated accordingly

***Keywords***—Bowen's disease, conjunctival intraepithelial neoplasm, premalignant

## 1 INTRODUCTION

Conjunctival intraepithelial neoplasm (CIN) is a spectrum disease arising from ocular surface squamous epithelial. It represents a premalignant epithelial neoplasia that typically starts near the limbus and may progress to involve the cornea [1]. CIN remains non-invasive with the basement membrane intact and the underlying substantia propria spared [2].

This low-growing tumor originates from a single mutated cell on the ocular surface [2], and is also known by names such as Bowen's disease, conjunctival squamous dysplasia, intraepithelial epithelioma, and epithelial dyskeratosis.

The aetiology can be multifactorial which include environmental factors to host such as ultraviolet light exposure, exposure to petroleum products, smoking, xerophthalmia (vitamin A deficiency) and having light skin complexion (less pigmentation individual) [2].

We report a case of CIN III in a patient presenting with lesion over the conjunctival and eventually invading the cornea.

## 2 CASE REPORT

A 65-years-old lady presented with a whitish lesion over her right eye for one year. She has no known medical illness. She is not allergic to any food or medications. She noticed the lesion arising from the right supero-temporal conjunctiva and growing slowly over time, covering the upper part of the cornea. However, there was no eye discharge or eye pain. She has no history of trauma to the right eye prior to the presentation. The patient is a housewife with no history of excessive sun exposure and is a non-smoker.

On examination, her best corrected visual acuity was 6/12 in her right eye and 6/12 in her left eye. Upon anterior segment examination of her right eye, there was presence of a conjunctival lesion covering the superior half of the cornea, measuring 4x7 mm, with presence of feeding vessels (Figure 1). The remaining portion of the conjunctiva appeared normal without any signs of growth. While the upper part of the cornea was obscured by the conjunctival lesion, the lower part remained clear. There was no conjunctival or corneal epithelial defect seen after fluorescein staining.

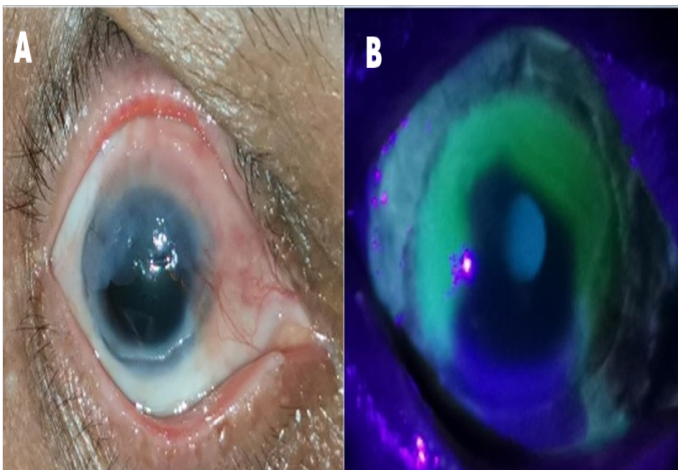


**Figure 1.** Right eye shows a conjunctival lesion covering the superior half of the cornea with presence of feeding vessels (A). There was no conjunctival or corneal epithelial defect seen after fluorescein staining (B)

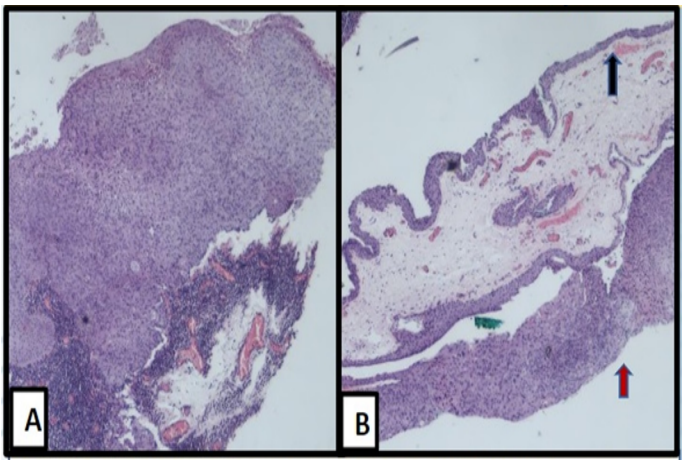


**Figure 2.** Histopathological examination using hematoxylineosin stain with magnification 40X of the right conjunctival lesion shows markedly thickened epithelial region of the conjunctiva with full thickness dysplasia (A). In (B), there is normal part of the conjunctival (black arrow) accompany by thickened epithelial region with full thickness dysplasia (red arrow), exhibiting nuclear pleomorphism, hyperchromatic nuclei with abundant eosinophilic cytoplasm. The underlying stroma appears loosed

The anterior chamber was deep with no anterior chamber reaction or any mass. Posterior segment examination of the right eye yielded unremarkable findings. Conversely, examination of the left eye revealed no abnormalities. Intraocular pressure measurements were within normal range for both eyes.

Histopathological examination (HPE) was warranted to identify the lesion. Excisional biopsy for the right conjunctival lesion was performed. HPE confirmed the diagnosis of CIN III showing dysplastic squamoid epithelial cells involving two-third to near full thickness of the epithelial layer and exhibit moderately pleomorphic, hyperchromatic nuclei with abundant eosinophilic cytoplasm (Figure 2). The underlying stroma appears loosed.

Reviewed at 6 months post-excision biopsy, her visual acuity in the right eye was maintained at 6/12. There was no recurrence or regrowth of the lesion around the right eye. However, there was minimal scarring over the superior half of the right cornea. She is currently on regular follow-up for assessment of the right eye.

## 3 DISCUSSIONS

CIN is a dysplasia of the ocular surface epithelium that has not yet invaded the substantia propria of conjunctiva or Bowman layer of the cornea [2]. About 95% of CIN lesions occur at the limbus, where the most actively mitotic cells reside [1].

The main predisposing factors for CIN are human papilloma virus (HPV) and sunlight exposure. Shields et al. discovered in their study that CIN accounted for 39% of all premalignant and malignant lesions, and 4% of all the conjunctival lesions. Others factors include ultraviolet light exposure, exposure to petroleum products, smoking, xerophthalmia (vitamin A deficiency) and having light skin complexion (less pigmentation individual) [2].

In CIN, basement membrane remains intact and substantia propria is spared [3]. HPE usually will reveal conjunctival with full thickness replacement of epithelial layers with mildly dysplastic cells, exhibiting nuclear pleomorphism, hyperchromatic nuclei with abundant eosinophilic cytoplasm [4]. CIN can present in various forms including gelatinous, leukoplakic or papilliform [5].

In this patient, there is also corneal involvement. Corneal involvements are due to the abnormal epithelium arise from the adjacent limbus appears as abnormal squamous cells having a translucent, grayish and frosted appearance which has a characteristic of fimbriated or pseudopodia configurations [2]. Few differential diagnoses were considered including pinguecula, pterygium and conjunctival malignancy. However, pinguecula remains on the conjunctival and will not progress to cornea. Whereas pterygium usually arise nasally or temporally and rarely it will grow superiorly. HPE was warranted to identify the lesion. Patient's HPE shows markedly thickened epithelial region of conjunctival with thickness of dysplasia which confirmed the diagnosis of CIN. CIN has varying degrees of conjunctival epithelial dysplasia. In this case report, patient has CIN III suggests near full-thickness epithelial involvement.

Identification of CIN from other lesions is important, as the confirmation of diagnosis will change the treatments and management of the existing conditions. HPE is still considered as the gold standard to confirm CIN [2].

Other imaging modalities which can be done include cornea optical coherence tomography, impression cytology, and confocal microscopy. However, impression cytology can only assess superficial tissues and unable to identify the depth of involvement and confocal microscopy has limitation in field of view and has usage difficulty [6].

In our patient, excisional biopsy was performed, and the lesion was removed to minimize the risk of seeding.

## 4 CONCLUSION

In view of malignant potential, CIN must be diagnosed promptly, differentiated carefully, and treated accordingly. HPE is required for a definite diagnosis

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