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Ectopic Cilia: A Histopathological Study

Keitaro Hase^a Satoru Kase^a Mika Noda^a
Tsutomu Ohashi^c Satoru Shinkuma^b Susumu Ishida^a

Departments of ^aOphthalmology and ^bDermatology, Hokkaido University
Graduate School of Medicine, and ^cOhashi Eye Center, Sapporo, Japan

Key Words

Ectopic cilia · Histopathology · Crypts of Henle

Abstract

Cilia are normally found at the eyelid margin, while ectopic cilia are one or more lash follicles appearing in an abnormal position within the eyelid. We herein report two cases of cilia located in the palpebral conjunctiva. A 31-year-old female and a 46-year-old male presented with ectopic cilia in the superior palpebral conjunctiva. Histopathological study of the excised ectopic cilia and related lesions showed the cilia-related lesion to be located in the epithelial pit that contains goblet cells, which is consistent with the crypts of Henle. The hair follicle was surrounded by granulation tissue, while a dermal papilla and a hair matrix, which are known to produce hair follicles, did not exist in the excised tissue. While anterior ectopic cilia are congenital, ectopic cilia in the palpebral conjunctiva may be acquired, and these aberrant cilia are associated with crypts of Henle and chronic inflammation.

Ectopic cilia are extremely rare anomalies, in which one or more lash follicles appear in an abnormal position within the eyelid. We herein report two cases of ectopic cilia in the superior palpebral conjunctiva together with the histopathology, indicating a novel pathogenesis.

Case Report

Case 1

A 31-year-old female had been suffering from irritation of the right eye since August 2009. She was diagnosed with ectopic cilia in the right superior conjunctiva, and the cilia were excised at the initial clinic. Since the cilia recurred, she was referred to our university hospital on April 13, 2011. Her visual acuity (VA) was 20/20 in both eyes. The intraocular pressure (IOP) was normal. Slit-lamp examination demonstrated three black hairs located in the palpebral conjunctiva of the upper lid ([fig. 1a](#)), and mild superficial punctuate keratopathy in the right eye. There was no family history of any similar disorder. She had no medical history of any ocular surgery or trauma. The conjunctival lesion was ophthalmologically diagnosed as ectopic cilia. It was excised as square-shaped tissue, including black hairs and a tarsal plate tissue. Histopathological analysis revealed three hairs on the

conjunctival surface, where conjunctival epithelium that contains goblet cells had grown into the stroma (fig. 1b). Marked inflammatory cell infiltration was seen beneath the conjunctival epithelium without foreign body reaction. However, neither dermal papillae nor hair matrixes nor hair follicle tumors were observed in the tissue, even in the deeper-cut sections (fig. 1c). After the conjunctival tissue excision, topical eye drops of 0.1% fluorometholone were administered. The ectopic cilia had not recurred as of October 2011.

Case 2

A 46-year-old healthy male had been suffering from mild ocular pain in the left eye since October 2011. His VA and IOP were within normal ranges. Slit-lamp examination demonstrated a hair located in the palpebral conjunctiva of the upper lid with hyperemia in the left eye (fig. 2a). He was diagnosed as having ectopic cilia in the left superior conjunctiva, and the cilium was plucked out at a private clinic. Slit-lamp examination showed a tiny conjunctival pit stained by fluorescein dye (fig. 2b, c). The histopathology of the excised hair showed a hair follicle with neither dermal papilla nor hair matrix (fig. 2d). After the excision, topical eye drops of 0.1% fluorometholone were administered. The ectopic cilia had not recurred as of November 2011.

Discussion

Ectopic cilia are very a rare condition, presenting as a disturbance of the position of the eyelashes; only 18 cases have been reported in humans [1]. Previous publications have reported two distinct types of this disorder: an anterior type, in which the cilia protrude from the anterior surface of the tarsal plate, and a posterior type, in which they protrude from the posterior surface [2]. Although the present cases are considered to be of the posterior type, histological analysis of posterior-type ectopic cilia has yet to be conducted [3].

The crypts of Henle are microscopic pockets scattered in the conjunctiva around the eyeball. They are responsible for secreting mucin, a proteinous substance that makes up the inner layer of tears [4]. In case 1, histopathological analysis showed that the cilia were surrounded by granulation tissue consisting of inflammatory cells and blood vessels. The cilia-related lesion was located in the epithelial pit that contains goblet cells, which is consistent with the crypts of Henle. In contrast, dermal papillae and hair matrixes, which are known to produce hair follicles, were not found in the excised tissue in either case, indicating that the cilia did not arise from the conjunctiva in situ. These results suggest that the cilia in the palpebral conjunctiva might have originated as normal cilia that spontaneously migrated from the eyelid, eventually becoming aberrant cilia in the crypts of Henle.

In conclusion, according to the histopathological analysis, ectopic cilia in the palpebral conjunctiva may be associated with the anatomical features of the crypts of Henle as well as chronic inflammation. We can confirm that ectopic cilia in the palpebral conjunctiva are acquired aberrant cilia, in contrast to anterior ectopic cilia, which are congenital.

Fig. 1. Ectopic cilia in the right superior palpebral conjunctiva before excision (**a**). Histological analysis of ectopic cilia (**b, c**). The arrow indicates cilia (**b**). The cilia-related lesion was located in the epithelial pit (**b**, arrowheads). Ectopic cilia are surrounded by granulation tissue, consisting of inflammatory cells and blood vessels (**c**, arrowheads).

Fig. 2. Slit-lamp examination reveals a hair located in the palpebral conjunctiva of the upper lid with hyperemia in the left eye (**a**). After the cilium was plucked out, slit-lamp examination showed a tiny conjunctival pit stained by fluorescein dye (**b, c**). Histopathology of the excised hair demonstrates a hair follicle with neither dermal papilla nor hair matrix. The arrow indicates the hair cortex (**d**).

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