Presumable Corneal Lymph Cyst: A Case Report

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Abstract

Purpose: To report a case of recurrent corneal intrastromal cyst containing lymph fluid

Case report: A 13-year-old girl presented with recurrent cyst of the left cornea, which had been drained three years before, but had gradually recurred. The cyst was successfully drained. Histologic examination, cytologic analysis, and protein electrophoresis were performed on the cyst fluid. Histopathologic examination of the cyst fluid revealed lipid-containing macrophages, White blood cells, and rare Red blood cells. Protein electrophoresis of the aspirate and blood serum showed a gamma globulin of 39% (higher than blood serum) and albumin of 52.5% (similar to blood serum) suggesting a lymph-containing corneal cyst.

Conclusion: Corneal cysts are divided into different types: epithelial cysts which may be associated with surgery or trauma, cysts associated with an ectopic lacrimal gland or prolonged corneal edema. To our knowledge, this is the first report of a corneal cyst suspected to containing lymph fluid.

Keywords: Corneal Cyst, Intrastromal Corneal Cyst, Lymph

Introduction

Intrastromal corneal cysts are uncommon lesions, some types of which have been reported include epithelial cysts, pseudocysts, and lacrimal cysts. The diagnosis of the cyst type has been made according to the morphology and pathologic examinations.

Epithelial cysts are caused by implantation of corneal epithelial cells in the stroma and their subsequent intrastromal proliferation, which is often secondary to trauma¹ or surgery such as cataract extraction,² keratoplasty,³ corneal laceration,¹ or any other corneal interventions.¹ These lesions may lead to corneal opacity and formation of air-fluid level,¹ and therefore may involve the visual axis and decrease vision.⁴ These types of cysts may also be congenital in origin without any previous history of trauma.⁵ An ectopic lacrimal gland in the cornea or sclera may cause a tear-containing lacrimal cyst.⁶

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Received: June 1, 2009
Accepted: July 2, 2009

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Prolonged corneal edema and rupture of Descemet’s membrane - as occurs in keratoconus and hydrops - may lead to aqueous influx into the stroma which cause a corneal cyst that is connected to anterior chamber and this would contain aqueous fluid. The cysts also frequently contain intact and degenerated epithelial cells. Here we report a corneal cyst whose composition analysis suggested a lymphatic fluid.

**Case report**

A 10-year-old girl presented with a corneal opacity in the left eye from two years before, which had gradually extended anteriorly. The patient had no complaints of pain, photophobia, or decreased vision. She denied any previous ocular trauma, surgery or any other significant medical history. The family history was unremarkable.

On slit-lamp exam, a cystic space was visible in midstroma of the left temporal cornea, which had a grayish-yellow color and poorly defined irregular borders (Figure 1). No sign of previous intraocular inflammation was discernable. Posterior segment was normal and the eyes were emmetropic with visual acuities of 20/20. As the cyst was threatening visual axis, it was drained. Pathologic examination of the cyst aspirate revealed a few epithelial cells but numerous foamy macrophages (Figure 2).

The patient returned to the clinic three years later; during this period, the cyst gradually recurred. Cyst size was larger and new intrastromal vessels in its wall were evident. Micropipette was used to re-drain the cyst and its cyst wall was scratched in order to obtain a tissue sample; this was complicated by minimal intrastromal hemorrhage. Coincident blood serum survey was conducted.

Protein electrophoresis of the aspirate showed a gamma globulin of 39% (higher than blood serum) and albumin of 52.5% (similar to blood serum); pre-albumin, alpha 2 globulin, and beta globulin levels were undetectable (less than blood serum). Scratched sample showed blood cells.

Three months later, minimal fluid retention was noted along with a new lesion, presumably an epithelial cyst secondary to surgery. On confocal scan exam, cyst wall fibrosis with some areas of squamous cell lining was suggested (Figure 3).

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**Figure 1.** Photograph showing cystic space in midstroma of the left temporal cornea, which had a grayish-yellow color and poorly defined irregular borders

**Figure 2.** Microscopic examination of the cyst aspirate revealed a few epithelial cells but numerous foamy macrophages.

**Figure 3.** Confoscan of the recurrent corneal cyst after draining and scratching of its wall showed a multilayered squamous-like lining cyst with some areas of fibrosis.
Discussion
As mentioned earlier, corneal epithelial cysts are the most common type of all corneal cysts and are diagnosed by the presence of intact and degenerated epithelial cells in the cyst space.\(^2\)\(^-\)\(^5\) If such cysts are associated with lacrimal gland elements\(^6\) analysis of their contents may reveal high s-IgA, lysosome, and lactoferrin levels.

Our patient had no ocular history (trauma and surgery) and the eye exam was otherwise normal (the cornea was not edematous), so an epithelial cyst or pseudo-cyst is unlikely. Presence of numerous foamy macrophages and the result of electrophoresis with high levels of immunoglobulin prompt us to suggest a lymph-containing corneal cyst.

Conclusion
Lymph is a faintly yellow, alkaline fluid that contains lymphatic cells and proteins resembling blood plasma, but at different concentrations.\(^5\)\(^-\)\(^12\) Lymphatic vessels are absent in the cornea but lymph angiogenesis may develop in response to inflammation and trauma, causing leakage and retention of lymph fluid in the stroma.\(^10\)\(^-\)\(^12\) In such a situation, formation of a lymph-containing cyst is presumable. Alternatively, choristoma (congenital development of a histologically normal tissue at an abnormal location) may also lead to presence of lymphatic vessels in the cornea and subsequent formation of a lymph-containing corneal cyst and such a phenomenon may explain our findings.

References