Treatment of giant fornix cysts with intralesional trichloroacetic acid injection

Naser Owji¹ and Alireza Bolkheir

Poostchi Ophthalmology Research Center, Shiraz University of Medical Sciences, Shiraz, Iran

ABSTRACT

PURPOSE: To treat giant fornix cysts by injecting intralesional trichloroacetic acid (TCA) as the first and largest series of giant conjunctival cysts treated by chemo-destruction.

METHODS: A 20% intralesional TCA solution was carried out to treat 10 patients of giant fornix cysts in hospital.

RESULTS: Chemo-destruction was successful primarily in 7 out of 10 patients. Recurrence was developed in three cases after 7 months to 3 years (18 months average). One patient underwent chemo-destruction, again without any recurrence after 1 year. Two patients refused reinjection; therefore, surgical excision was performed for them.

CONCLUSION: Intralesional injection of TCA was successful in resolving giant fornix cysts without surgical intervention. It is a safe procedure and is recommended for treating large conjunctival cysts.

INTRODUCTION

Conjunctival cysts consist of about 12% conjunctival lesions, and 45–80% of cystic lesions of the conjunctiva.¹⁻³ Majority of conjunctival cysts are small and asymptomatic and also do not require treatment.⁴⁻⁶ Furthermore, large conjunctival cysts are rare. Implantation cysts and glandular cysts may attain a large size.^{7,8} Glandular cysts rise from the accessory lacrimal glands of Krause. Implantation cysts of conjunctival are caused by submucousal inoculation of surface epithelium, secondary to trauma, chronic conjunctival inflammation, or previous surgical procedures.^{3,9} Large cysts may be problematic for the patients as well; they can lead to cosmetic disfiguring, foreign body sensation, and ptosis. Surgical excision has been the primary treatment. Surgical excision of large cysts is a delicate, time consuming procedure and may be complicated especially in cases with intraorbital extension. Surgical excision of large fornix

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¹Corresponding author: Oculoplastic Service, Department of Ophthalmology,

Khalili Hospital, Shiraz University of Medical Sciences, 71345-3484 Shiraz, Iran.

Tel.: +98 71 36291779; fax: +98 71 36279373.

E-mail: owjin@sums.ac.ir

cysts may cause ptosis, foreshortening of conjunctiva, and dry eye.⁶ Recurrence may occur due to incomplete excision. We present our experience in the treatment of large conjunctival cysts extending to the orbit by simple and effective technique. Trichloroacetic acid (TCA) injection was carried out in 10 cases with high success rate. To the best of our knowledge, this is the first and largest series of giant conjunctival cysts treated by chemo-destruction.

METHODS

The study protocol was approved by the Ethical Committee of University of Medical Sciences and adhered to the tenets of declaration of Helsinki. Ten patients with giant fornix cysts were treated by intralesional TCA injection in hospital. The patients presented with fullness of upper or lower eyelid. The mass lesions were painless and gradually enlarged and were associated with ptosis in the upper eyelid (Figure 1). There was no history of trauma, previous surgery, or conjunctivitis. Eversion of upper lids and retraction of lower lids showed large fornix cysts. Trans-illumination of the masses showed cystic quality. Superficial scaring of overlying conjunctiva was visible on most of the cysts.

The patients had no other ocular complaints and did not report any change in visual acuity. Orbital computed tomography (CT) was performed for some patients with deep orbital involvement.

KEYWORDS

giant fornix cyst, trichloroacetic acid, chemodestruction

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CT showed well-demarcated, with uniform density, and extraconal soft tissue mass without associated bony changes.

The injection technique was as follows: The procedures were performed under general anesthesia. A 27-gauge needle attached to a 5-ml syringe containing 1–2 ml of 20% TCA was prepared. The contents of the cyst were then aspirated until the cyst walls collapsed. The partially diluted fluid containing cyst fluid plus 20% TCA was then injected to fill the cyst. Precaution was taken not to over inflate



Figure 1 Top: Large fornix cyst caused ptosis in the upper lid. Bottom: Eversion of the upper lid shows large fornix cyst.

Table 1 Results of chemo-destruction in treating giant fornix cysts

the cyst. When the cyst wall turned white, the cyst was re-aspirated flat, and the needle was removed (Figure 2). Upon the removal of the needle, the exit wound was irrigated by an assistant so that the damage from the acid to the surrounding tissue was minimized. The patients received topical steroid and antibiotic for 1 week.

RESULTS

Chemo-destruction was successful primarily in 7 out of 10 patients (Table 1). All patients were followed up for a minimum period of



Figure 2 Top: Shrinkage of large fornix cyst after trichloroacetic acid (TCA) injection. Bottom: Coagulated cyst content mixed with TCA in 5-ml syringe.

Pathology	Second procedure	First chemo-destruction	Site	Size	Age	Patient number
-	-	Successful	RUL	1.5 cc	45	1
Conjunctival cyst	Surgical excision	Recurrence after 7 months	RUL	1.5 cc	22	2
-	-	Successful	LLL	1.5 cc	66	3
-	-	Successful	LUL	1.5 cc	39	4
-	-	Successful	RLL	2 cc	37	5
-	-	Successful	LLL	1 cc	37	6
-	Chemo-destruction	Recurrence after 16 months	LUL	2 cc	19	7
-	_	Successful	LUL	2 cc	27	8
Apocrine hidrocystoma	Surgical excision	Recurrence after 3 years	RLL	1.5 cc	45	9
-	_	Successful	LLL	1.2 cc	56	10

RUL, right upper lid; RLL, right lower lid; LUL, left upper lid; LLL, left lower lid.

1 year of procedure for the recurrence and development of any complications. Recurrence was developed in three cases after 7 months to 3 years (18 months average). One patient underwent chemo-destruction, again without any recurrence after 1 year. Two patients refused reinjection; therefore, surgical excision was performed for them. Histopathologic examination of resected cysts revealed conjunctival cyst and apocrine hidrocystoma.

The follow-up time for each patient who underwent surgical excision of the cyst varies. The shortest follow-up was 10 months, and the longest was 5 years. So far, there have been no recurrences after complete excision.

DISCUSSION

Giant conjunctival cysts are rare and located most probably in the upper and lower fornices.^{2,3,5,7,10} Histopathologic examination of the cases clinically diagnosed as conjunctival cyst of the fornix showed several features. The most common type is conjunctival inclusion cyst. Inclusion cysts are benign cysts filled with clear serous fluid containing shed cells or gelatinous mucous material. They may be primary or secondary.^{2,3} Primary cysts may be congenital, which is formed by apposition of the conjunctiva folds¹¹ or excessive invagination of the conjunctival epithelium during embryonic development¹⁰ and remain hidden in the fornix and gradually increases with age. However, most primary inclusion cysts are acquired and arise from growing inwards of surface epithelium secondary to chronic conjunctival inflammation.⁹ In the setting of inflammation, conjunctival epithelium becomes loose, the subconjunctival tissue is edematous, and the surface epithelium may exfoliate with mild trauma and embedded into deeper tissue. The patients are not aware of this trivial trauma.³

Secondary inclusion cysts are developed due to the implantation of conjunctival epithelium underneath the stroma following injury or surgery.¹¹ Conjunctival inclusion cyst formation has been reported following ocular surgery such as strabismus surgery, vitreoretinal surgery, and scleral tunnel phacoemulsification.¹²

The other common fornix cysts are cyst of gland of Krause. They are retention cysts which develop due to ductal obstruction following trauma, chronic inflammation, or cicatricial disease of conjunctiva.^{2,11,13-15}

Lymphatic cysts are the other type of fornix cysts. They develop from dilated lymphatics that cannot be emptied.^{2,3,11}

Implantation cysts and glandular cysts of the fornix may attain a large size.^{5,7,8} They are initially asymptomatic but gradually enlarge and may extent to the anterior orbital space. Large cysts can lead to cosmetic disfigurement, reduced motility, foreign body sensation, globe displacement, and ptosis.^{2,5} Common subjective presentations of these cysts are soft mass that are palpable through the eyelid. Eyelid eversion reveals subconjunctival mass with clear fluid that is trans-illuminated by hand light or slit lamp beam. Sometimes posterior extension of the cyst is not evaluable by palpation, and CT scan is required.

All patients presenting with large fornix cysts are symptomatic and require treatment. Management of these patients was carried out primarily by surgical excision.^{2,7,8,10,15} Complete excision of cyst is necessary. Recurrence of the cyst may occur after aspiration or incomplete excision of the cyst.^{16–18} These cysts are thin walled, and rupture occurs during excision usually.³ Precaution should be taken to prevent rupture of the cyst during surgery. Dissection of conjunctival cyst from superficial conjunctival may be difficult due to points of attachment. Complete excision of cyst requires sacrificing of points of attachment. It may lead to foreshortening of cul-de-sac in cases with large fornix cyst. Shortening of cul-de-sac may require secondary mucous membrane graft.⁶ Excision of cyst in superior fornix has hazard of possible injury to levator muscle and leads to ptosis or injury to the lacrimal ducts and result to dry eye.⁶

Thermal cautery and intracyst alcohol injection have been successfully used for the treatment of conjunctival cysts. Cysts of conjunctival could be treated by thermal cautery. The cautery was applied directly to the surface of the cyst for a few seconds.¹⁹ Thermal cautery was successful in small conjunctival cysts. Isopropyl alcohol injection was performed in two cases of post strabismus surgery with small inclusion cyst. The result of alcohol injection in giant inclusion cysts is not known.²⁰

Rosenquist et al. successfully treated four patients with small conjunctival inclusion cyst with 20% trichloroacetic acid injection.²¹ We employed TCA for the treatment of large conjunctival inclusion cysts in four patients following enucleation, with 100% success rate.²² To the best of our knowledge, there is no published article that applied trichloroacetic acid (TCA) in the treatment of large conjunctival cyst in a seeing eye. In this study, we employed TCA in the treatment of giant fornix cysts.

This procedure was successful in 8 out of 10 patients. There was no significant complication, only mild superficial conjunctival and corneal burns developed in one patient without any sequels.

In chemo-destruction of conjunctival cysts by TCA, the following points should be considered: The surgeons should be aware of the potential risk of conjunctival and corneal acid burn following the leakage of TCA. They should be cautioned to prevent the leakage of TCA. If leakage is developed, copious irrigation of ocular surface prevents deep burning. The other potential complication is orbital inflammation following the extravasation of acid in a cyst extending to the orbit. This event may develop following our inflation of the cyst during acid injection.

In conclusion, intralesional TCA injection is a simple, effective and seems to be a safe procedure for treatment of large fornix cysts. We recommend this procedure for the treatment of large conjunctival cysts. If the cysts recur, injection could be repeated.

CONFLICT OF INTEREST

None of the authors has any financial interest in the study.

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AUTHOR CONTRIBUTION

NO and AB contributed to study as follow: design and conduct of the study; collection of the data; management of the data; analysis and interpretation of the data; preparation of the manuscript; and review and approval of the manuscript.

REFERENCES

- Zaidi N, Nath K, Gogi R. Primary conjunctival tumours. Indian J Ophthalmol. 1980;28:171–8.
- 2. Thatte S, Jain J, Kinger M, Palod S, Wadhva J, Vishnoi A. Clinical study of histologically proven conjunctival cysts. Saudi J Oph-thalmol. 2015;29(2):109–15.
- Nath K, Gogi R, Zaidi N, Johri A. Cystic lesions of conjunctiva (a clinicopathological study). Indian J Ophthalmol. 1983;31(1):1–4.

- Thygeson P. Diseases of the conjunctiva. In: Berens C, editor. The eye and its diseases. 2nd ed. Philadelphia: WB Saunders; 1949. p. 396.
- 5. Sameshima SS, Beyer-Machule CK. Acquired ptosis associated with a conjunctival cyst. Ophthal Plast Reconstr Surg. 1988;4(3):159–62.
- 6. Kiffney GT Jr. Management of conjunctiva cysts. Eye Ear Nose Throat Mon. 1964;43:48–52.
- 7. Kiffney GT Jr. Large conjunctival cysts, a report of three cases. Am J Ophthalmol. 1962;54:458–61.
- Perkins EW. Implantation cyst of the conjunctiva. Am J Ophthalmol. 1952;35(2):196–8.
- 9. Mathur SP. Two cases of conjunctival cyst. Br J Ophthalmol. 1959;43(12):763-4.
- Guijarro-Oria FJ, Mencia-Gutierrez E, Gutierrez-Diaz E, Lopez-Tizon E. Orbital giant conjunctival epithelial primary cyst. Arch Soc Esp Oftalmol. 2013;88(4):157–9.
- 11. Mortada A. Cyst of duct of Krause's gland. Br J Ophthalmol. 1963;47:375–9.
- Vishwanath MR, Jain A. Conjunctival inclusion cyst following sub-Tenon's local anaesthetic injection. Br J Anaesth. 2005;95(6):825-6.
- 13. Duran JA, Cuevas J. Cyst of accessory lacrimal gland. Br J Ophthalmol. 1983;67(7):485-6.

- 14. Elshazly LH. A clinicopathologic study of excised conjunctival lesions. Middle East Afr J Ophthalmol. 2011;18(1):48–54.
- 15. Woo KI, Kim YD. Cyst of accessory lacrimal gland. Korean J Ophthalmol. 1995;9(2):117–21.
- 16. Weatherhead RG. Wolfring dacryops. Ophthalmology. 1992;99(10):1575-81.
- 17. Bullock JD, Fleishman JA, Rosset JS. Lacrimal ductal cysts. Ophthalmology. 1986;93(10):1355–60.
- Ikawa F, Kiya K, Yamanaka M, Satoh H, Kutsuna M, Kitaoka T, et al. Orbital lobe lacrimal ductal cyst. Surg Neurol. 1994;41(4):334–7.
- Hawkins AS, Hamming NA. Thermal cautery as a treatment for conjunctival inclusion cyst after strabismus surgery. J AAPOS. 2001;5(1):48–9.
- Kothari M. A novel method for management of conjunctival inclusion cysts following strabismus surgery using isopropyl alcohol with paired injection technique. J AAPOS. 2009;13(5):521–2.
- Rosenquist RC, Fraunfelder FT, Swan KC. Treatment of conjunctival epithelial inclusion cysts with trichloroacetic acid. J Ocular Ther Surg. 1985;4:51–3.
- Owji N, Aslani A. Conjunctival cysts of the orbit after enucleation: the use of trichloroacetic acid. Ophthal Plast Reconstr Surg. 2005;21(4):264–6.