

First report of palpebral conjunctival inflammatory nodule associated with *Demodex* species

Ying Li, Ga Eon Kim¹, Kyung Chul Yoon, Won Choi

Demodex mite infestation of the palpebral conjunctiva as focal inflammatory nodule has been not reported. A 46-year-old man presented with lower palpebral conjunctival nodules in his left eye. Slit-lamp examination showed focal inflammatory nodules at the inferior palpebral conjunctiva accompanied by conjunctival hyperemia and purulent secretion. Excisional biopsy of this lesion was performed. Pathological evaluations revealed inflammatory granuloma associated with *Demodex* species in the palpebral conjunctiva. This is the first report of *Demodex*-related palpebral conjunctival inflammatory nodule and may be helpful in future *Demodex*-associated studies.

Key words: Conjunctival nodule, *Demodex*, demodicosis

Demodex (class *Arachnida*, superorder *Acariformes*), a microscopic, obligate, and elongated mite, is the most common ectoparasite on the human body surface. There are many species of *Demodex*; however, only *Demodex folliculorum* and *Demodex brevis* are found on the human body surface.^[1] *D. folliculorum* is found in hair and lash follicles, whereas *D. brevis* exists in sebaceous and meibomian glands. They often coexist on the same areas of the skin, such as the face, cheeks, forehead, nose, and external ear tract, where active sebum excretion favors their habitation and breeding.^[2,3] Several cases of ocular *Demodex* infestation have been reported in various ophthalmic diseases such as trichiasis, madarosis, blepharitis, lipid tear deficiency, tear film disturbance, chalazia, and keratoconjunctivitis.^[4,5] However, until now, focal inflammatory nodule at the palpebral conjunctiva associated with this organism has not been reported. Here, we describe the first case of focal inflammatory nodules on the palpebral conjunctiva associated with *Demodex* species in a healthy middle-aged man.

Case Report

A 46-year-old man visited our outpatient clinic with lower palpebral conjunctival masses in his left eye accompanied

by ocular pain, tenderness, foreign body sensation, tearing, and conjunctival redness 4 weeks before consult. The patient had no history of prior ocular or immunological diseases such as blepharitis, chalazia, or rosacea. Three weeks before visit, the patient underwent incisional drainage procedure under suspicion of chalazion at the private clinic; however, there was no drainage. Following 2 weeks of oral antibiotics and anti-inflammatory drugs, there was no improvement at the lesion. On examination, his visual acuity in both the eyes was 20/20 without correction. Slit-lamp examination showed hyperemic conjunctiva with mucopurulent secretions in the inferior fornix. By pulling the inferior eyelids, about 1 mm × 1 mm sized 2 focal inflammatory nodules were observed in the palpebral conjunctival surface. A photograph of the inferior palpebral conjunctiva was obtained through the slit lamp [Fig. 1]. Cylindrical dandruff was not observed on the eyelashes. The findings of the right eye were unremarkable.

Excisional biopsy of the lesions was performed. Between the two nodules, we found a presence of the *Demodex* mites in the deep-located nodule. On low-power examination, the specimen had dense lymphocytic infiltration with granuloma formation and lipid dropout spaces associated with foreign body-type granulomatous inflammation [Fig. 2a]. A dilated residual gland filled with inflammatory exudates was also visible. On high-power examination, *Demodex* organisms in a lipid dropout space and foreign body-type multinucleated giant cell engulfing a mite were observed [Fig. 2b]. Periodic acid-Schiff and tissue Gram stains did not demonstrate fungal or bacterial infections. Therefore, pathological evaluation



Figure 1: Slit-lamp photograph of a 46-year-old man with palpebral focal conjunctival nodule in his left eye

Access this article online	
Quick Response Code:	Website: www.ijjo.in
	DOI: 10.4103/ijjo.IJO_375_18

Department of Ophthalmology and Research Institute of Medical Sciences, Chonnam National University Medical School and Hospital, ¹Department of Pathology, Chonnam National University Medical School and Hospital, Gwangju, South Korea

Correspondence to: Prof. Won Choi, Department of Ophthalmology, Chonnam National University Hospital, 42 Jebong-Ro, Donggu, Gwangju, 61469, South Korea. E-mail: wchoi82@hanmail.net

Manuscript received: 15.03.18; Revision accepted: 07.05.18

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: reprints@medknow.com

Cite this article as: Li Y, Kim GE, Yoon KC, Choi W. First report of palpebral conjunctival inflammatory nodule associated with *Demodex* species. Indian J Ophthalmol 2018;66:1365-7.

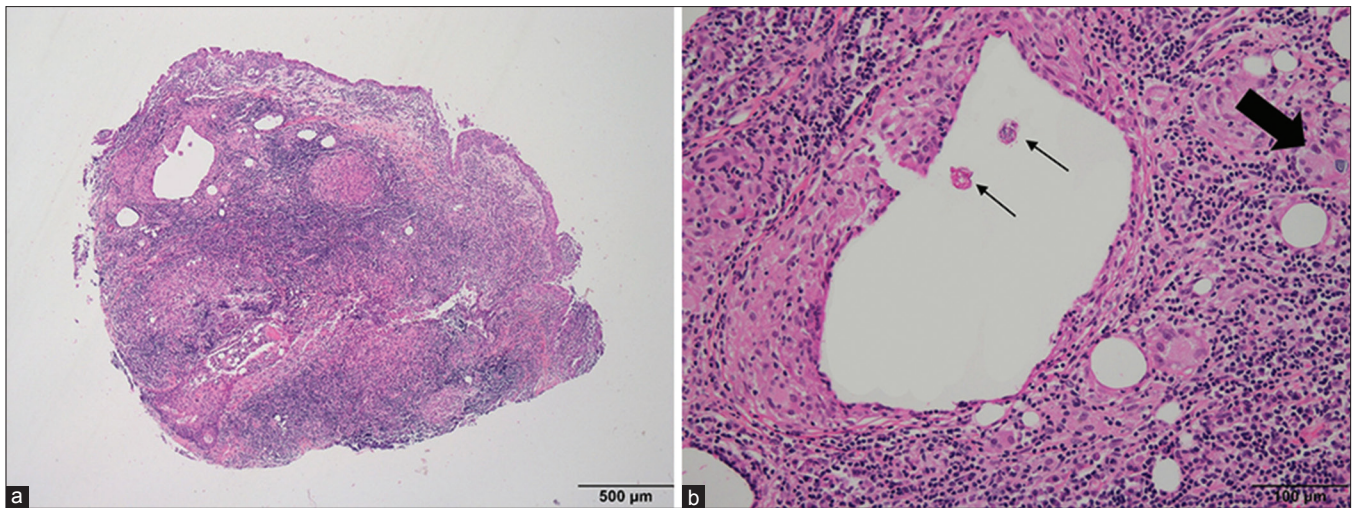


Figure 2: Biopsy of lower palpebral conjunctival masses showed *Demodex*-associated inflammatory granuloma (a) Lipid dropout space associated with foreign body-type granulomatous inflammation was observed (H and E, $\times 40$) (b) *Demodex* organisms in lipid dropout space (small arrows) and a mite engulfed by a multinucleated giant cell were observed (large arrow) (H and E, $\times 200$)

revealed that the inflammatory granuloma was associated with *Demodex* species [Fig. 2].

After 1 week, the conjunctiva was no longer congested and the palpebral conjunctival lesion was stable without surgical complication. Weekly lid scrubs with 50% tea tree oil (TTO) were performed, and daily lid scrubs with 10% TTO shampoo were advised for 2 months according to a previously reported method.^[4] One year after the operation, the lesion was stable without evidence of recurrence.

Discussion

Demodex infestation has been reported in various dermatologic conditions, such as pustular folliculitis, papulopustular scalp eruptions, perioral dermatitis, and hyperpigmented patches of the face.^[2,3] In the eyes, besides blepharitis, ocular demodicosis has been also reported as various presentations such as eyelash loss or abnormal alignment as well as lipid tear deficiency due to chronic inflammation in the meibomian gland, conjunctivitis, recurrent chalazia, or sight-threatening keratitis.^[4-6] However, until now, ocular demodicosis presenting with palpebral conjunctival inflammatory nodule has not been reported.

In the present case, a healthy 46-year-old man presented at our hospital with lower palpebral conjunctival mass in his eyes. The result of pathological evaluation was consistent with granulomatous inflammation associated with the *Demodex* species. Although exact identification between *D. folliculorum* and *D. brevis* by pathologic examination is very difficult, we assume that *D. brevis* was the causative organism rather than *D. folliculorum* because lesions of the posterior lid surface are usually associated with *D. brevis* as mentioned above. As we diagnosed ocular demodicosis by tissue sampling and by hematoxylin and eosin staining instead of lash sampling and microscopic examination, which is the current definitive diagnostic method, inaccurate differentiation between these two species remains a limitation of this report.

Previously published articles described the ocular *Demodex*-killing effects of TTO *in vitro* and *in vivo* and introduced a new clinical treatment and lid scrubbing with

TTO.^[4,7] In the same manner, our patient was also successfully treated with additional lid scrubbing with TTO after conjunctival mass excision.

Clinical aspects of chalazia are characteristically presenting as a firm, large, and painless lid nodule without definitive inflammation. On the other hand, our patient showed about 1 mm \times 1 mm sized soft 2 focal inflammatory nodules in the palpebral conjunctival surface accompanied with ocular pain, tenderness, foreign body sensation, tearing, and conjunctival redness. In addition, there was a history of no internal material drainage by surgery performed at the local clinic. Therefore, we could diagnose as focal inflammatory nodules rather than chalazia due to these differences.

Conclusion

To the best of our knowledge, this is the first case report of ocular demodicosis initially presenting as focal inflammatory nodule at the palpebral conjunctiva. In addition, this parasite needs to be taken into consideration in the differential diagnosis of associated organisms of inflammatory granulomatous nodule in the palpebral conjunctiva.

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.

Acknowledgment

The study was partially supported by the CNUH Biomedical Research Institute (CRI 13906-22).

Financial support and sponsorship

Nil

Conflicts of interest

There are no conflicts of interest.

References

1. English FP, Nutting WB. Demodicosis of ophthalmic concern. *Am J Ophthalmol* 1981;91:362-72.
 2. Baima B, Sticherling M. Demodicidosis revisited. *Acta Derm Venereol* 2002;82:3-6.
 3. Forton F, Germaux MA, Brasseur T, De Liever A, Laporte M, Mathys C, *et al.* Demodicosis and rosacea: Epidemiology and significance in daily dermatologic practice. *J Am Acad Dermatol* 2005;52:74-87.
 4. Gao YY, Di Pascuale MA, Elizondo A, Tseng SC. Clinical treatment of ocular demodecosis by lid scrub with tea tree oil. *Cornea* 2007;26:136-43.
 5. Kheirkhah A, Casas V, Li W, Raju VK, Tseng SC. Corneal manifestations of ocular demodex infestation. *Am J Ophthalmol* 2007;143:743-9.
 6. Liu J, Sheha H, Tseng SC. Pathogenic role of demodex mites in blepharitis. *Curr Opin Allergy Clin Immunol* 2010;10:505-10.
 7. Gao YY, Di Pascuale MA, Li W, Baradaran-Rafii A, Elizondo A, Kuo CL, *et al.* *In vitro* and *in vivo* killing of ocular demodex by tea tree oil. *Br J Ophthalmol* 2005;89:1468-73.
-