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Ectoparasitic infestations of the eye: Three cases with three different arthropods

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ABSTRACT

Parasitic infestations of the external eye are uncommon and more often prevalent in tropical and developing countries. We present three cases with ocular infestation caused by three different arthropods admitted to the ophthalmology department of a tertiary health care centre during two months. The first case was infected with the larvae of *Oestrus ovis*, the second case with *Phthiriasis palpebrarum*, and the third case with a tick, *Ixodes ricinus*. All patients in this report were living in city center of Bursa, one of the most industrialized cities of Turkey. Ocular ectoparasitic infestations should be taken into consideration in differential diagnosis of conjunctivitis, blepharitis and eyelid mass, even if patients living in urban areas. Due to the rarity of ocular ectoparasitic infestations and overlapping symptoms with more commonly occuring ophthalmic conditions, a careful ophthalmic examination is required to avoid misdiagnosis and delay in treatment.

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Keywords: Ocular ectoparasitic diseases, ophthalmomyiasis, phthiriasis palpebrarum, ocular tick infestation

Introduction

Parasitic infestations of the external eye are uncommon. They usually cause mild symptoms, so most cases of ocular infestations caused by arthtopods are late or misdiagnosed. Generally, damage of the eye is a result of the direct mechanical effects of the parasite or its larvae, or pathogens transmitted by these arthropods [1-3]. The diagnosis usually depends on detecting the arthropod on the ocular surface with a detailed slit-lamp examination. If the arthropod or its larvae are found on the ocular surface or eyelids, the most effective treatment is removing them mechanically as soon as possible. Nevertheless, some ectoparasites can invade the globe and cause temporary or permanent loss of vision. Ocular ectoparasitic diseases commonly seen are ophthalmomyiasis, phthiriasis palpebrarum, and tick infestations [1, 4]. In this report, we presented three different cases infected by three different arthropods, and then referred to ophthalmology department of a tertiary health care center of Bursa, Turkey.

Case Presentations

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Case 1

A 21-year-old male presented to ophthalmology clinic with a 4-hour history of foreign body sensation, itching and lacrimation in his left eye. The symptoms began immediately after some muddy water was splashed to his left eye while he was working on the land. Biomicroscopic examination of the left eye revealed an about 1-2 mm-length-larva moving on the surface of the bulbar conjunctiva. Pulling down the inferior eyelid enabled visualization of two larvae moving away from the light on the fornices (Figure 1). Totally eight larvae was detected on the ocular surface. On microscopic examination, the prominent features of the larvae were the segmented translucent body and white cephalopharyngeal skeleton with characteristic pair of curved, dark oral hooklets.

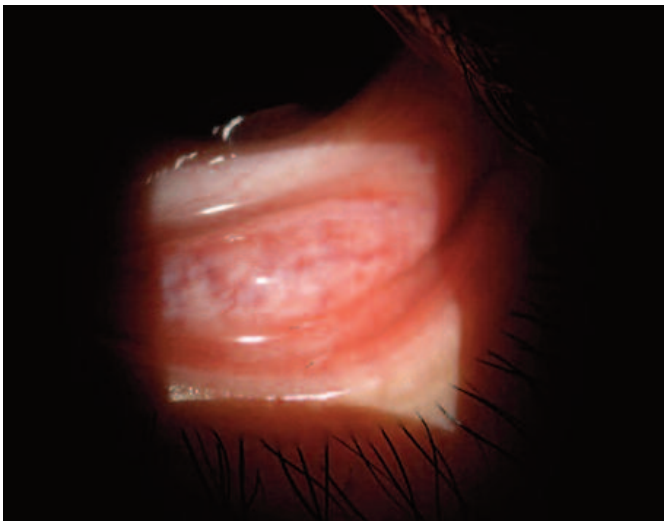

Figure 1. *Oestrus ovis* larvae on lower fornix. The larvae had segmented translucent body, and white cephalopharyngeal skeleton with characteristic pair of curved, dark oral hooklets.

Case 2

A six-year-old boy was admitted to ophthalmology clinic with symptoms of moderate itching and irritation of his both eyelids for about a month. On external examination, exfoliative lesions and mild edema in the eyelids were observed. Slit-lamp examination revealed multiple mobile and semitransparent lice at the base of the eyelashes and numerous, translucent, white nits were adherent to the eyelashes at both upper eyelids (Figure 2a and 2b) and the left lower eyelid.

Case 3

A 51-year-old male was referred to our clinic with a small light brown lesion on his left upper eyelid. He noticed this lesion two days before and he claimed it has been enlarging ever since without pain. He had a history of being in a rural area two days before presentation. Mild swelling of the left upper eyelid was observed, with a light brown lesion at the center. The lesion was on the lid margin between the eyelash roots (Figure 3a). Biomicroscopic examination of the lesion showed that it was the body of an alive tick (Figure 3b), some part of it was buried in the eyelid.

As a beginning all of the patients were treated by removing the ectoparasites mechanically by a blunt forceps. The species of the arthropods were identified as *Oestrus ovis* in the first case, *Phthirus pubis* in the second case and *Ixodes ricinus* in the third case by the microbiology laboratory. Topical antibiotics and corticosteroids were prescribed for preventing secondary bacterial contamination and reducing the inflammation. After one week, the ocular symptoms of all patients completely resolved and no residual ectoparasites could be found on the ocular surface. In

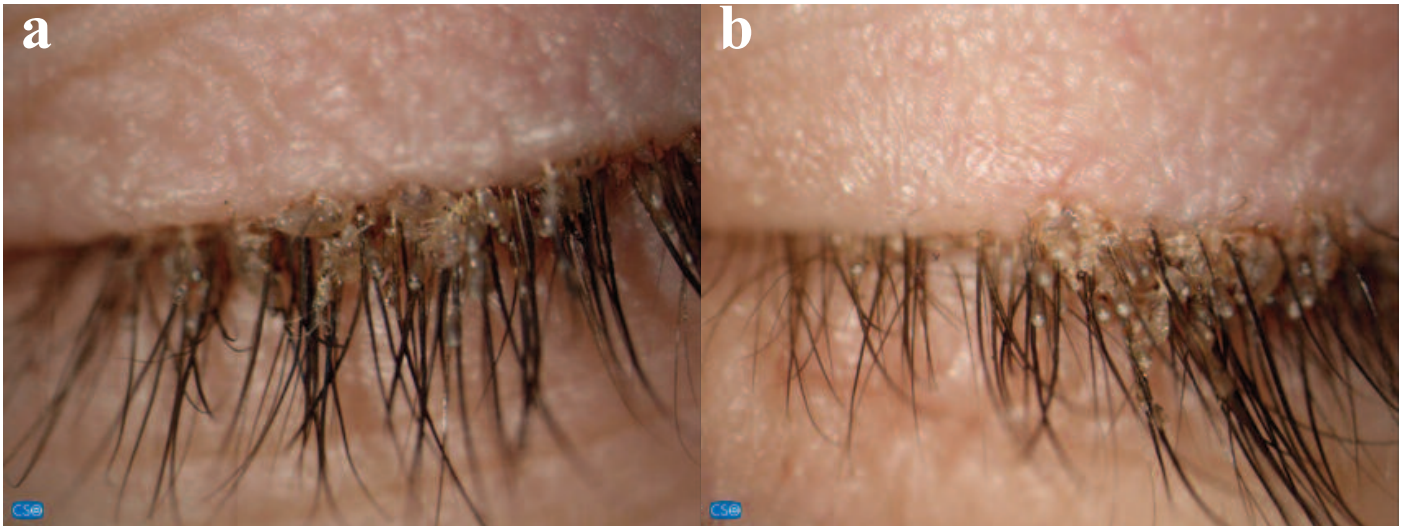

Figure 2. Multiple semitransparent lice, *Phthirus pubis*, at the base of the eyelashes and numerous, translucent, white nits adherent to the eyelashes at right (a) and left (b) upper eyelid.

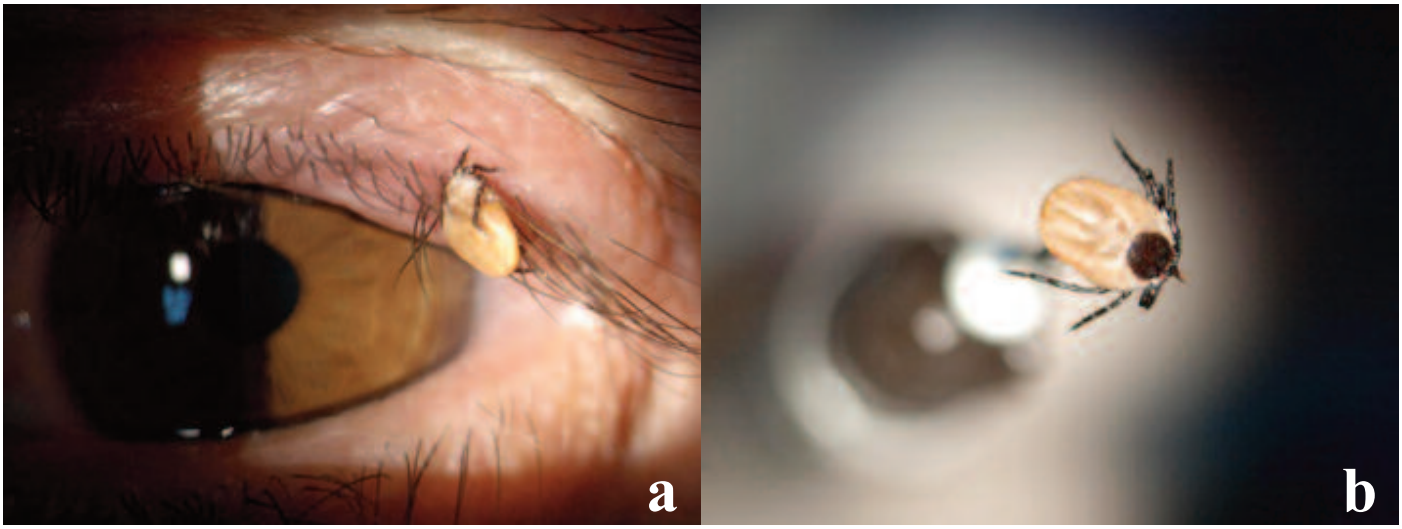

Figure 3. The alive tick on the lid margin, some part of it was buried in the eyelid (a). The tick was identified as *Ixodes ricinus* (b).

case 3, subsequent serological tests for zoonoses were negative and there was no sign of systemic disease during six month of follow-up.

Discussion

Ophthalmomyiasis externa is an infestation of the superficial external ocular structures with larvae of most commonly sheep nasal botfly (*O. ovis*) [3]. It is a large, yellowish gray fly about 10-12 mm long. The larval stage of *O. ovis* takes place in the nasal cavities of the sheep, cattle or horse. Humans may serve as an accidental host when the botfly releases its larvae on to the eye while it is flying [5]. Although it is reported that this infestation is more common in rural areas and sheep raising areas [4, 5], our first case was working in an area closer to a hippodrome in the city center when his symptoms were first started.

Phthiriasis palpebrarum is a rare eyelid infestation caused by the louse, *Phthirus pubis* [4, 6]. This parasite is primarily adapted to living in pubic hair and transferred from the genital area to the eyelashes by hand or sexual contacts [6, 7].The symptoms range from pruritic lid margins to blepharitis and marginal keratitis. Therefore, semitransparent lice and nits can be easily overlooked and phthiriasis palpebrarum can be misdiagnosed as allergic conjunctivitis due to pruritis [1, 6].

Tick infestation of ocular tissues is rare. Ticks can become embedded in the meibomian gland orifices and may be appear to be a mass at the eyelid margin [4, 8]. If a segment of the tick is left in situ after removal, granulomasor abscesses can occasionally develop [9]. Unlike other ectoparasites, ticks are important vectors for the transmission of zoonoses. The parasite should be completely removed as soon as possible [8], because the risk of systemic disease transmission increases significantly after 24 hours of attachment [8, 10].

Ectoparasitic infestations are more common in geographical areas where enviromental factors and poor hygienic conditions facilitate the parasitism between human and animals [3]. All patients in this report were living in city center of Bursa, one of the most developed and industrialized city in Turkey. *Oestrus ovis* and *I. ricinus* may be seen in our city due to its closeness to villages having sheep and goat farms. *Phthirus pubis* infestation generally associated with poor hygiene and overcrowding may be increasingly diagnosed as a result of rural-urban migration. To our best knowledge, this is the first report that three different ocular ectoparasitic infestations presented from the same ophthalmology clinic.

The most effective treatment of ocular ectoparasitic infestations is removing the arthropod mechanically if it is possible. Besides that pilocarpine 4% slows or paralyzes parasite's movement. Also, washing with 5% povidine iodine solution, cryotherapy, argon laser photocoagulation, fluorescein eye drops 20%, physostigmine 25%, yellow mercuric oxide oinment 1% and oral ivermectin are different treatment options [1].

Conclusion

In conclusion, even if patients living in urban areas, ocular ectoparasitic infestations should be taken

into consideration in differential diagnosis of conjunctivitis, blepharitis and eyelid mass. Due to the rarity of ocular ectoparasitic infections and overlapping symptoms with more commonly occurring ophthalmic conditions, a careful ophthalmic examination is required to avoid misdiagnosis and delay in treatment. Transmission of zoonoses and systemic evaluation should be kept in mind in ocular tick infestations.

Informed consent

Written informed consents were obtained from the patients and family of the patient (boy) for the publication photographes used in this study.

Conflict of interest

The authors declared that there are no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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