The European Research Journal

http://www.eurj.org

Original Article

Differential diagnosis and proper aproach for ophthalmomyiasis externa: an experience of 12 patients

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ABSTRACT

Objective. To evaluate the differential diagnosis and therapy of patients who had ophthalmomyiasis externa, which is a self-limiting parasitic disease and is formed as a result of infestation of ocular surface with myiasis flies. *Method.* A retrospective study. *Result.* In our series we evaluated 12 patients attending intense eyelid edema and mimicking an acute catarrhal conjunctivitis, with symptoms of burning, stinging, itching, and increase in lacrymation as well as the sense of foreign body moving in the eye. After further biomicroscopic examination 1 - 2 mm size of mobile, black headed transparent larvae were seen. After mechanical removal of larvae from the eye, topical antibiotic and mild steroid drops were sufficient for improvement. *Conclusion.* We hereby want to emphasize the importance of careful examination and detailed anamnesis even in conjuncitivitis cases.

Eur Res J 2015;1(2):50-54

Keywords: Conjunctivitis, oestrus ovis, ophthalmomyiasis

Introduction

Ophthalmomyiasis externa is a self-limiting parasitic disease which is formed as a result of infestation of ocular surface with myiasis flies [1,2]. Even though ocular involvement is under 5% in all human myiasis, especially in summer ophthalmomyiasis is frequently seen in regions where farm animals exist. Oestridae ovis larva which is in Schizophora series of Diphtheria team, is the most common ophthalmomyiasis reason. Oestridae ovis is commonly isolated from nasal and paranasal cavities of farm animals in which insufficient hygienic conditions are provided [3]. Its clinical presentation is mostly mimicking an acute catarrhal conjunctivitis, with burning, stinging, itching, and increase in lacrimation as well as the sense of foreign body moving in the eye. With anterior segment involvement, it can cause pseudo orbital cellulitis and punctate keratitis. Larvae of myiasis flies rarely penetrate the ocular surface, defined as ophthalmomyiasis interna and cause complications can end up with vision loss [4-6].

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Received: 22.03.2015; Accepted: 02.06.2015: Published Online: 04.07.2015

Materials and Methods

In this study twelve external ophthalmomyiasis cases were evaluated, including eight patients applied to Burdur Gölhisar State Hospital Ophthalmology Department and four patients applied to Sanliurfa Suruc State Hospital Ophthalmology Department. The demographic data and anamnesis of patients were shown particularly in Table 1.

In detailed ophthalmologic examination, patients had hyperemia, lacrymation, and intense edema on eyelids in one eye as shown in Figure 1. In biomicroscopic examination papillary reaction, microhemorrhages and mucose secretion on tarsal conjunctiva was observed. Upon further examination, 1 - 2 mm size of moving, black headed transparent larvae were determined as shown in Figure 2. The larvae that escaped from the bright light of biomicroscopy, were immobilized by dropping topical local anaesthetic (proparacaine HCl 0.5%). Then they were taken out from conjunctiva by the help of forceps. At that time the larvae were observed to be held on to external tissues pretty strong with their hooks. Except one of our patients, this process was applied in polyclinic condition. Only a 4 year old girl was interfered under general anaesthesia. As to identify the species, larvae were put into 10% formol solution. After eyes were irrigated with 0.9% saline solution, topical antibiotic ofloxacin 0.3% drop (4 times a day) and topical fluorometholone 0.1% drop (4 times a day) were prescripted. After a week of treatment, all the patients got well. The larvae which were sent to Mehmet Akif Ersoy University, Faculty of Veterinary Medicine, Parasitology Department were found to be first term larvae of Oestrus ovis as shown in Figure 3 and Figure 4.

Table 1. The demographic data and detailed anamnesis of patients

Patient	Age/ sex	Date of application	Suffered eye	Anamnesis	Occupation	Number of larva
1	4 / F	June, 2014	OD	Dust got into eye	-	4
2	50 / F	July, 2014	OD	Hit by a fly	Shepherd	4
3	45 / F	August, 2014	OS	Hit by a fly	Farmer	3
4	49 / F	September, 2014	OD	Hit by a fly	Shepherd	Uncounted
5	60 / F	September, 2014	OD	Hit by a fly	Farmer	Uncounted
6	18 / M	September, 2014	OS	Hit by something	Student	3
7	41 / K	November, 2014	OD	Hit by something	Workman	13
8	19 / M	November, 2014	OD	Hit by something	Student	12
9	17 / M	March, 2014	OD	Hit by a fly	Student	11
10	33 / F	September, 2013	OS	Hit by something	Housewife	5
11	21 / M	September, 2013	OS	Hit by a fly	Student	9
12	52 / M	August, 2013	OD	Hit by a fly	Shopkeeper	Uncounted

F: female, M: male, OD: ocular dexter (right eye), OS: ocular sinister (left eye)

Figure 1. Unilateral intense eyelid edema, hyperemia, mucoid secretion, appearence of pseudoorbital cellulite.

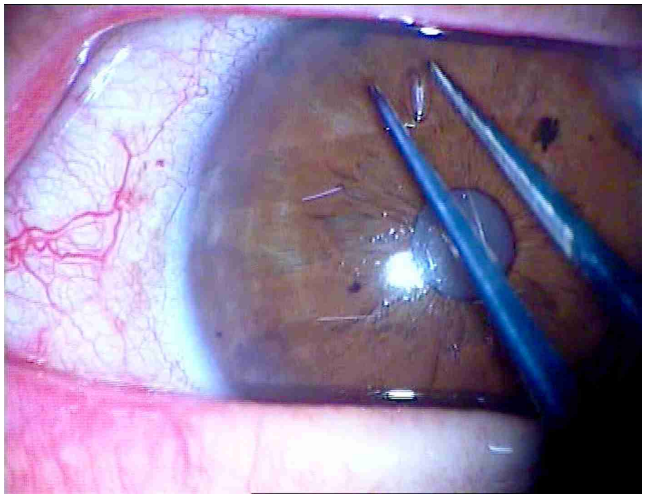

Figure 2. A black-headed, transparent, 1 - 2 mm in length larva upon cornea was taken out by the help of forceps.

Figure 3. The first term larva of oestrus ovis.

Discussion

In taxonomic classification ophthalmomyiasis flies are composed of three families; Oestridae, Calliphiride, Sarcophagidae [7]. Oestrus ovis fly which is the most frequent factor of human ophthalmomyiasis, after maturation it leaves its eggs to nasal mucosa of farm animals such as sheep, goat, cattle and horse. After larvae proceeding towards nasal cavity and frontal sinus and get matured, they drop into cocoon through nasal mucose (by sneezing). It completes its life cycle after coming out of its cacoon between three and six weeks. Human is a random interval in this cycle. The black image of papilla imitates a safe hole that myiasis fly can leave its larvae after ovulation. As a result of strike of myiasis fly to cornea, larvas fall into conjunctival fornix. Conjunctival sac as being wet, hot and dark area plays a role of ideal

Figure 4. The hooks which are located on the head of the first term larva, help to hold on conjunctiva tightly.

organic culture media for hatching of larvae. In the first 24 hours, they become larva form of having oral hook. Fortunately oestrus ovis larvae are unable to secrete proteolytic enzymes, neither inflammation nor itself does not invade the inner parts of eye [8]. Because of the necessary food for larvae to develop is not found in human tear, larvae cannot continue life cycle and die as first stage larvae [9]. Since they hold conjunctiva with their hooks wherein their mouths and segments, death of larvae and again with the same reason irrigation of conjunctiva as the treatment is not efficient. In order to increase the possibility of determining these 1 mm of transparent moving larvae in biomicroscopic treatment, fornixes should be examined carefully under weak light as possible by inverting eyelids . In treatment the moving larvae should be taken out mechanically by using forceps after dropping of topical local anesthetic to slow down the movements of them. In order to prevent secondary bacterial infection and to get the inflammation under control, mild steroid drops are suggested in addition topical antibiotic drops [10]. Alternatively, it was reported in literature that yellow mercuric oxide ointment was used as the only treatment option by the North African farmers [11]. With application of ointment, air holes are closed and larvae die as a result of asphyxia. Pather et al. stated that oral mebendazole, in the absence of ivermectin, is an alternative effective systemic agent in medical therapy [12].

Also identification of species provides us to take a precaution to prevent the development of serious complications by penetrating the globe with ophthalmomyiasis interna [13]. Sharifipour et al. [14] reported a case of anterior ophthalmomyiasis interna with a single larva attached to the iris. While preparing the patient for surgical removal, larva migrated to posterior segments of the eye. This unpredictable behavior of the larva raised a great deal difficulty in treatment. After parasitological identification a stage 1 larva of Calliphoridae family was determined.

External ocular myiasis cases applied with complaints of hyperemia, lacrimation, pain, scratching and acute catarrhal conjunctivitis symptoms with mucoid secretion, as well as the sense of foreign body moving in the eye. In these patients the diagnosis can easily be confused with conjunctivitis, anamnesis is also important besides physical examination. This patient group who have contact with farm animals such as sheep and goat, had histories of ocular contact with foreign object in their detailed query. In our series, seven patients had a history of fly striking on eye and four had a history of a foreign object in the eye. However, in detailed anamnesis it was learned that there are slaughterhouses near all patients.

In literature Gholamhossein et al. reported an experience of 18 external ophthalmomyiasis cases. They highlighted that besides mimicking symptoms of allergic conjunctivitis, peripheral corneal infiltration may be seen in this infestation. Even though on initial examination decreased visual acuity was detected in cases accompanying corneal findings, authors did not need to change the therapeutic approach [15].

In literature, reported cases frequently occur in spring and summer times [16]. Our patients applied to clinic in summer and autumn months. This difference was interpreted as parasites continued their life cycle due to high temperature. For protection, the groups that are working with farm animals should be given training properly to prevent blind medication usage. At the same time, it is important to keep slaughterhouses clean as well as to keep them isolated from communal life areas. At any complaining condition, they should be informed to apply to ophthalmologist without delay.

In conclusion, ophthalmologists should think of ophthalmomyiasis in differential diagnosis with more careful anamnesis and detailed biomicroscopic examination even in conjunctivitis cases.

Consent

Written informed consents were obtained from the patients for publication of this case reports and any accompanying images.

Conflict of Interests

None of the authors has conflict of interest with submission. No financial support was received for this submission.

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