An Outbreak of Human External Ophthalmomyiasis Due to *Oestrus ovis* in Southern Afghanistan

James Dunbar,¹ Ben Cooper,¹ Tim Hodgetts,¹ Halabi Yskandar,¹ Pieter van Thiel,¹⁶ Steve Whelan,¹ Justin Taylor,¹ and David R. Woods³⁴

¹United Kingdom Joint Force Medical Group and ²Royal Dutch Army, Camp Bastion, and ³UK Joint Force Med Group, Camp Bastion, Afghanistan; ⁴School of Clinical Medical Sciences, Newcastle University, Newcastle, United Kingdom; and ⁵Division of Infectious Diseases, University of Amsterdam, and ⁶NL Military Health Care Expertise Co-ordination Centre, Amsterdam, The Netherlands

*Oestrus ovis* is the most common cause of human ophthalmomyiasis, and infection is often misdiagnosed as acute conjunctivitis. Although it typically occurs in shepherds and farmers, *O. ovis* ophthalmomyiasis has also been reported in urban areas. We report the first case study of *O. ovis* infection from Afghanistan.

**Case history.** A 29-year-old female nurse reported being hit in the eye by a fly while reading. A nursing colleague immediately irrigated the eye with sterile water. The patient instantly complained of a burning discomfort in the eye and the sensation of a moving foreign body. She attended the Accident and Emergency department of the UK Joint Force Medical Group in Camp Bastion, Helmand province, southern Afghanistan.

Slit-lamp examination revealed multiple translucent larvae over the conjunctiva; macroscopic evaluation noted that they were 1–2 mm in length. The larvae were removed using cotton swabs under local anaesthetic and were placed in sterile, normal saline. Microscopic examination was performed the following morning and revealed the larvae shown in figure 1. Digital photography via the microscope followed by liaison with the environmental health officer and electronic communication with the Amsterdam Medical Centre allowed identification of the organism within 6 h as the first-instar larva of the sheep botfly *Oestrus ovis* L. 1758 (Diptera, Oestridae).

After subsequent identification, an additional 5 patients presented with symptoms, and their cases were promptly diagnosed. An immediate review of recent attendances at the attached primary health care facility identified 1 additional case that had previously been diagnosed as acute catarrhal conjunctivitis. Of interest, these cases were clustered around a 3-day period following a significant sandstorm, which had originated from the Lut desert in southeastern Iran. This storm had brought a swarm of locusts and, quite possibly, the mature *O. ovis* flies into the area.

**Discussion.** The Oestridae are a large family of obligate parasites of animals in their larval stage. The sheep botfly larva of *O. ovis* are a typical parasite of the eyes, ears, nose, and skin of sheep and goats. In general, female *O. ovis* (a large, dark gray fly with dark spots on the dorsum of the thorax and abdomen) deposit live first-instar larvae into the nostrils of their animal hosts. However, there have been many reported cases of human ophthalmomyiasis (infestation of the eye with larvae) due to *O. ovis*. The first 2 cases in southern Pakistan were reported in 2006 [1]; the first case in the Caribbean, in an urban area of Barbados, was reported in 2004 [2]; and 4 cases were reported in Kuwait in 1993 around the time of the Gulf conflict in 1991 [3]. Other reports came from Libya [4], where it was found to occur particularly among adult male shepherds and farmers from rural areas. In a retrospective review of a 4-year period in Tunisia, *O. ovis* accounted for 2 of 65 identified parasitic infections of the eye [5]. There was also a case report involving an American soldier serving in northern Iraq [6], as well as 3 cases in Italy that were not related to direct exposure to wild or farm animals [7]. Ophthalmomyiasis due to *O. ovis* is not a new phenomenon, however, with cases among shepherds in Sicily having been reported up to 150 years ago [8].

The patient’s typical history includes being struck in the eye by a fly, followed immediately by pain, burning, lacrimation, the sensation of a foreign body, and the development of subsequent edema. Misdiagnosis is common, with ascription of the acute conjunctivitis to other causes.

First instar larvae are deposited by the adult fly, and although the larvae are usually restricted to the conjunctiva and cornea (with resultant corneal abrasions), penetration of the eye very occasionally occurs [9]. There have also been isolated rare reports of larvae in human nasal and pharyngeal cavities [10] causing local discomfort and frontal headache [11].
nately, the larvae generally do not survive beyond the first stage in humans. However, there was a report of third-instar mature larvae (essentially maggots) in the nasal cavity in a resident of an urban area in the United Kingdom [12].

Treatment is based on removal of the larva (up to 60 larvae have been removed at any one time [13]) followed by topical antibiotics, steroids and local analgesia. It is important to remember, as in the case described above, that irrigation of the conjunctival sac with normal saline is generally unsuccessful in washing out the larvae due to the tenacity with which the larvae can attach their oral hooks and body spicules. Instead, local anaesthetic followed by removal with cotton swab sticks or forceps under slit-lamp examination is preferred to reduce both irritation and the risk of intra-ocular penetration.

To our knowledge, these are the first cases reported from southern Afghanistan. This may reflect the local health care infrastructure. Although it typically occurs in shepherds and farmers in rural areas [4], *O. ovis* ophthalmomyiasis has also been reported in urban areas in patients who have no association with animal husbandry [12, 14]. Therefore, it is important that medical personnel recognize this condition and understand that it may not always be associated with animal contact. A suggestive history involving foreign body sensation and the development of an acute conjunctivitis should prompt close examination of the eye by slit-lamp for the presence of larvae. Furthermore, the larvae may die in the host, giving rise to a permanent nodule that macroscopically may resemble a sty [15], leading to further misdiagnosis.

*O. ovis*, which has a worldwide distribution, is the most common cause of human ophthalmomyiasis. It is important to consider it in the differential diagnosis of acute conjunctivitis and to recognize and treat the condition effectively—not only to reduce morbidity and the duration of discomfort, but also to reduce the potential complication of ophthalmomyiasis interna (i.e., penetration of the globe by larvae that may then be visible in the subretinal space and the vitreous cavity).

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**References**

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