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Report of a Case of Human Nasal Myiasis Caused By Second Instar Larvae of *Oestrus Ovis* in CHU Oran: Review of Literature

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Abstract

Myiasis is the invasion of human and animal organs and tissues by dipteran larvae. This is a case report of a human nasal myiasis caused by the second instar larvae of the sheep bot fly, *Oestrus ovis*. The cases of human myiasis at *Oestrus ovis* are accidental and rare, mainly affecting the eyes. In the literature, there are only sporadic reports of nasal myiasis.

We present a new case of nasal myiasis caused by the second instar larvae of *Oestrus ovis* in a 29-year-old male patient, originally from OuedRhiou in the west of Algeria, who is a medical doctor suffering from signs of rhinosinusitis.

Keywords: *Oestrus ovis*; Human myiasis; Nasal myiasis

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Introduction

Myiasis is defined as the invasion of human and animal organs and tissues by dipteran larvae [1-4] which optionally or necessarily feed on living or necrotic tissues for at least a period of time [5]. This is an essentially veterinary pathology. The human being is infected only accidentally [6-8]. Nasal myiasis is much more prevalent in tropical countries. The localizations in humans are varied: Cutaneous and subcutaneous, gastrointestinal, genitourinary or cavities of the face that can cause damage to the nasal cavities, ear canal or eyes [8]. Clinically, human myiasis may be benign and asymptomatic, or on the contrary may lead to violent disturbances or even death [9,10]. Among these types of myiasis, the nasal form is relatively rare [11,12]. We describe a nasal myiasis due to *Oestrus ovis* in a 29 year old patient from OuedRhiou, a doctor by profession with a literature review.

Case Presentation

A 29-year-old male patient from OuedRhiou who lives in Oran, Algeria, Without special medical history, Showing signs of left Rhinosinusitis with nasal discharge abundant two weeks after a short stay in his native village (OuedRhiou) 140 km east of Oran. Five days after the onset of this symptom and following a sneeze, two larvae are expelled from his nose, bringing him to consult the Department of Medical Parasitology and Mycology of CHU d'Oran. An endoscopy carried out at the ENT department showed a slight inflammation in the nasopharynx and did not

visualize any other residual larvae, an antibiotic treatment is then instituted in order to avoid superinfection.

Ten days later, the patient brought us a larva expelled from his nose. Fixed to 70% alcohol, and then heated to 90°C with 5% glycerine in our service for identification [13]. The patient's biological assessments were unusual, the frontal X-ray showed a small left maxillary sinus filling, supplemented by a CT scan of the sinuses, which objectified an aspect of a thickening of the left maxillary sinus mucosa, evoking chronic sinusitis.

The larva was identified macroscopically and microscopically according to the Zumpt criteria [1]. This was the second stage L2 larva of *Oestrus ovis*, measuring 6 mm long. This larva is of semi-cylindrical shape (**Figure 1**). The anterior end or pseudocephalon has two visible buccal hooks (**Figure 2**). The last metameris carries the posterior sub-circular stigmata with a central button, Pierced with numerous pores [1-14] (**Figure 3**).

Discussion

The human being is not a usual host of the *Oestrus ovis* fly or sheep nasal bot fly, but rare cases of larval infestations of these diptera have been described. The eye is the most affected site,



Figure 1 Larva of *Oestrus ovis* in second stage.

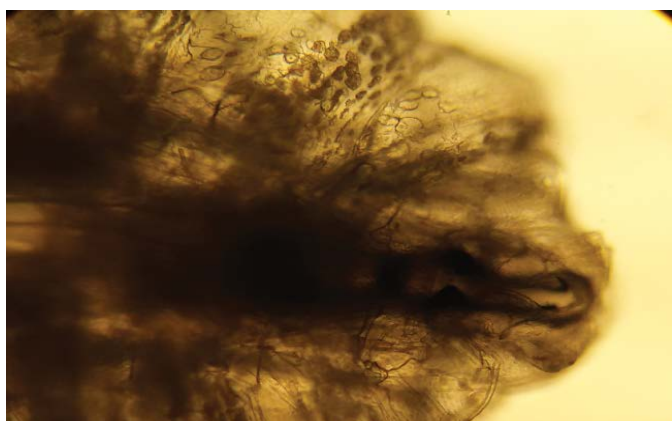


Figure 2 Cephalic end of the larva L2 of *Oestrus ovis*.

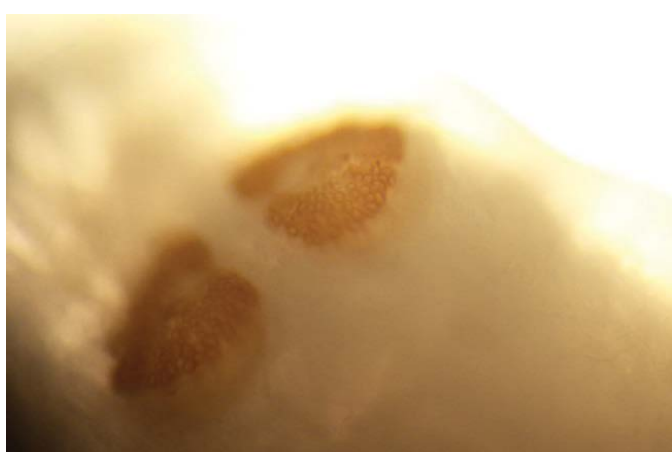


Figure 3 Posterior respiratory stigmata.

but larvae have been unusually found in human nasal cavities [4]. Even rarer are the cases of nasal myiasis with development of larvae up to the second and third stages.

We carried out a bibliographic search on Pub Med describing and listing all cases of human nasal myiasis due to *Oestrus ovis* in the

literature, in total, eighteen are the publications that report in detail twenty-one cases of human nasal myiasis due to *Oestrus ovis*, presented in **Table 1** among seventy publications of cases of human nasal myiasis due to different species of diptera larvae, *Oestrus ovis* included.

It is in Algeria, since 1904, that the brothers SERGENT have for the first time demonstrated the role of fly larvae *Oestrus ovis* in human pathology with agent responsible for ophthalmomyiasis [15-17] a country where the human myiasis had been known since the beginning of time by the inhabitants who called them thimni, which is that of the sheepbot fly in the Berber dialects [15,17]. In 1952, Edmond SERGENT published a survey on the geographical distribution of this human oculo-nasal myiasis due to *Oestrus ovis* in the world and proposed the use of thimni names for myiasis [18]. The cases of human myiasis described in the literature in Algeria are shown in **Table 2** the actual number of cases is certainly higher than the published cases, which makes it difficult to appreciate the actual incidence of myiasis in Algeria.

Oestrus ovis a yellowish-gray, cosmopolitan, non-pungent dipteran, 10-12 mm long. The adult has a short life devoted solely to breeding during which he does not feed. Larvae are obligatory parasites of the nasal fossae and frontal sinuses of sheep and goats [6-8]. *Oestrus ovis*' female viviparous fly, often in flight, deposits its larvae at the nostrils of the mammal [18-39]. First instar larvae deposited in the autumn (September to October) move up the animal's nasal fossae to reach the frontal sinuses where they mature to reach the third larval stage in two to twelve months and will be released into the nasal mucus the following spring [4]. They fall or are eliminated during sneezing on the soil, where they are transformed into a pupa, from which an adult insect is immersed four to six weeks later and the cycle begins again [4,6,8,15,37,39,40,41]. The animals thus infected show a summer rhinitis followed by a winter sinusitis [4].

In sheep, the pathogenic action results from two phenomena, namely a minor mechanical effect and allergic hyper-sensitization phenomena [4,14,29,38,42,43]. In humans, the traumatic and mechanical pathogenic action is preponderant. Clinical signs are due to the presence of larvae with buccal hooks and numerous very strong spines which ensure both their fixation and their displacement [24,26,38]. The short duration of parasite infestation in humans would prevent allergic expression of larvae [4,24,26,29,38].

The infestation of man is rare, it generally interests the eye [4]. The contamination is made from larvae L1 stages which are deposited by the female fly in full flight at the level of the conjunctival sac [6,27,37]. The human feels a brutal shock on his eye followed by inflammation, some hour later. The evolution is favourable after the extraction of the larvae [4,37,40-47]. Exceptionally, L1 larvae may settle at the external nasal orifices causing an itching sensation, bouts of sneezing accompanied by an abundant nasal discharge, seeing pains in relation to the sinuses [4,18]. Note also the possibility of deposition of the larvae on the lips responsible for oropharyngeal myiasis. In the cases reported, the duration of the pathology generally does not exceed fifteen days and the symptoms disappear gradually after the extraction of the larvae [4].

Table 1 Cases of human nasal myiasis due to *Oestrus ovis* reported in the world, since 1958.

Years	Countries	Number of Cases	Notes	References
1958	Algeria	1 case		[19]
1977	Turkey	1 case		[20]
1978	India	1 case		[21]
1990	Spain	2 cases		[11]
1997	United Kingdom	1 case		[22]
1997	Egypt	2 cases		[23]
1999	New Zeland	2 cases	Associatedwithophthalmomyiasis	[24]
2001	France	1 case		[4]
2007	China	1 case	Location at the maxillary sinus	[25]
2007	CanaryIslands			[26]
2008	Turkey	1 case		[27]
2010	United Kingdom	1 case	Associatedwithophthalmomyiasis	[28]
2011	Morocco	1 case		[29]
2011	Sweden	1 case		[30]
2011	Israel	1 case		[31]
2012	Neterlands	1 case	Location at the maxillary sinus	[32]
2015	China	1 case		[33]
2015	CanaryIslands	1 case	Associatedwithophthalmomyiasis	[34]

Table 2 Cases of human myiasis reported in Algeria, since 1929.

Years	Type of Myiasis	Species	Number of Cases	References
1929-1952	Ophthalmomyiasis	<i>Oestrusovis</i>	50 cases	[18]
1958	Oculo-nasal myiasis	<i>Oestrusovis</i>	1 case	[19]
1991	Head skin myiasis	<i>Lucilia</i>	2 cases	[35]
1999	Urogenitalmyiasis	<i>Faniacanicularis</i>	1 case	[36]
1997	Auricularmyiasis	<i>Chrysomabezziana</i>	1 case	[17]

Treatment consists of larval excision, antibiotic treatment may be combined to avoid superinfection [4,24,37,41,46], some authors recommend the systemic use of ivermectin which is an anthelmintic treatment [48].

The development of rhinomyiasis is usually benign after treatment. However complications have been described, as in the case of a patient with a nasal myiasis complicated by apneumocephalus [10].

Conclusion

Nasal myiasis is relatively rare in humans and can have consequences ranging from simple rhinitis and psychological stress to life-threatening complications of the patient [9]. It is necessary to know to evoke them in front the sudden appearance of the signs of rhinosinusitis with sensation of a foreign body moving in the nasal cavities, in order to be able to treat them early and to avoid the complications that can occur.

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