

CASE REPORT

ORAL MUCOSA MYIASIS CAUSED BY *OESTRUS OVIS*

Ramin Hakimi DMD*, Ismail Yazdi DMD**

*Department of Oral Medicine, Hamadan University of Medical Sciences, Hamadan,

**Department of Oral Pathology, Tehran University of Medical Sciences, Tehran, Iran

Myiasis is the infestation of live human and animals by dipteran larvae. One of the causes of human myiasis is *Oestrus Ovis* (sheep nasal botfly) which in the facial area reported cases mostly include eyes, nose, ears and pharynx. A case of oral mucosa myiasis in a three-year-old boy from a shepherd family living in a rural area of Iran is being reported. To our knowledge, this is the first reported case of oral mucosa myiasis.

Keywords • myiasis • *Oestrus ovis* • oral myiasis

Introduction

Myiasis, from the Latin words muia and iasis mean fly and disease respectively, as described by Zumpt is “the infestation of live human and vertebrate animals with dipterous larvae, which, at least for a certain period, feed on the host’s dead or living tissues, liquid body substances, or ingested food”.¹

Three dipteran families are considered as the main causes of myiasis in the livestock and also occasionally in human. These families include Oestridea, Calliphoridae (blowflies), and Sarcophagidae (fleshflies). Other important species mainly cause human myiasis are *Dermatobia hominis* (human botfly) and *Cordylobia anthropophaga* (thumb fly).^{2,3}

Oestrus ovis (sheep nasal botfly) from the class: Insecta, order: Diptera and family: Oestriidae, is one of the common causes of human myiasis in the reported cases. The adult insect with near 1 cm long, dark grey color and small black spots on the body is slightly smaller than a honey bee. Its mouthparts are vestigial. Larva is white, yellow or brown in color depending on the stage of growth. At the last stage the larva can reach to 2.5 to 3 cm in length. Posterior spiracular openings are

black and very conspicuous. The life cycle of *Oestrus ovis* divided in two main stages including parasitic and free phases. Parasitic phase starts with the placement of larva by the female fly on the body of the host and depending on the season and climate this stage may take about few weeks to some months. Then larva changes to the form of a pupa and after a complete metamorphosis, pupa changes to the form of an adult fly that lives about 4 weeks. The lifetime of mature fly is long enough for reproductive activities and developing eggs which hatch inside body of female fly and are ready for larvipositioning.^{4,5}

Myiasis is clinically classified as:

- Dermal and Subdermal myiasis
- Facial cavity myiasis
- Wound or traumatic myiasis
- Gastrointestinal myiasis
- Vaginal myiasis
- Generalized myiasis

Clinical manifestations of myiasis are not specific and vary according to the involved area of the body. General signs and symptoms including fever, myalgia, arthralgia, hypereosinophilia, elevated ESR (erythrocyte sedimentation rate) and inflammatory reaction at the site of infection such as pseudo-furuncles in dermal myiasis may be present.^{5,6}

First-stage larva is generally seen in human myiasis; however, reports indicate that the larva

•Correspondence: I. Yazdi DMD, Academy of Medical Sciences of Islamic Republic of Iran, Tehran, Iran. P.O. Box: 19395/4655, Fax: +98-21-2932125.



Figure 1. Macrophotograph showing gingival enlargement around teeth # 52, 51, 61 and 62, larvae penetrating into the gingival sulcus.

may remain up to the third stage of growth.^{7,8}

Careful removal of larvae from the site of infection will eliminate the symptoms and no further treatment may be required. However, in some cases, administration of topical corticosteroids and analgesics to relieve the symptoms and topical antibiotics to prevent bacterial contamination may be useful.^{5,9,10}

Case report

A 3-year-old boy from a rural area in Hamadan (a city in northwest of Iran) was referred to the dental clinic with a chief complaint of gum bleeding and discomfort in chewing. General symptoms including fever and malaise were present at the time of the initial visit.

Clinical examination revealed gingival enlargement of upper incisors along with bleeding from gingival sulcus. In addition, some small and moving wormlike objects, deeply penetrated in the involved area were seen and considered to be



Figure 2. Closer view of the same area shown in figure 1. Notice the black spots indicating posterior spiracle.

the cause of inflammation (Figures 1 and 2). Topical anesthetic was applied and the wormlike objects were removed gently by mean of pliers. The specimen consist of five larvae in the size of 2.5 to 4 mm long, white to dark yellow in color with a black spot at the end of the bodies (Figure 3) was sent to the department of parasitology at the faculty of health for further investigation. The parasitological report indicated those as *Oestrus ovis* larvae. Complementary treatment to the general symptoms was carried out in the clinic of internal medicine. The condition was controlled and patient was discharged. Follow up visit was advised but the patient didn't cooperate.

Discussion

In a review of the literature (PubMed), we found 60 reports published over the past 35 years (from 1965 to 2001) representing 393 cases of facial myiasis. The articles included 274 ophthalmic (two cases from Iran), 78 pharyngeal, 40 nasal and one aural myiasis, but not even a case of oral mucosal myiasis. Thus, the presented case can be considered as the first report of oral mucosa myiasis.

Myiasis occurs in the areas in which people live close to livestock, mostly in rural areas and villages. In the present case, the infestation occurred because of the patient stayed outdoors near a sheep flock where a considerable quantity of flies are usually present. Hot middays are the most frequent time for larvipositioning.¹¹ Mouth breathing might have been the way the fly came to the patient's oral cavity as a suitable place for larvipositioning. The larvae, which were placed in and around the mouth, penetrated into the gingival sulcus and positioned their heads down so the posterior spiracles could become exposed to the open air to make respiration possible.

The foreign body reaction which results from the penetration of larva in a live tissue had a general nonspecific appearance and must be differentiated from lesions like inflammatory gingivo-stomatitis, papillary inflammation, inflammatory exophytic lesions (e.g. pyogenic granuloma), periodontal abscess and oral manifestations of some malignancies (e.g. leukemia).

The techniques described for the control of myiasis in livestock, is mainly based on the use of organophosphorous and organochlorine insecticides. Topical application of an insecticide on



Figure 3. Macrophotograph of the removed larvae.

the infection site and dipping baths are both used. Use of single dose of slow release ivermectine is also effective in long-term prevention against parasites like dipterous larvae in animals. Biologic control using infertile male flies is another effective mean in eliminating mass of flies. In this technique, sterilization is achieved by irradiation of insects in pupa stage (5th day of growth).^{3,12}

None of the methods described above, despite their effectiveness in animals, are applicable to humans. The best method that can be used for humans is prevention by education. There is a higher risk of infestation in poor hygienic conditions. Wearing damp clothes or resting near sheep flocks and areas that have been recently soiled, especially in endemic areas, must be avoided. Use of repellents such as DEET is useful for travelers to endemic areas, but it is not practical for indigenous people.³

References

- 1 Zumpt F. *Myiasis in Man and Animals in the Old World*. London: Butterworths; 1965: 267.
- 2 French NP, Wall R, Cripps PJ, et al. The prevalence, regional distribution and control of blowfly strike in England and Wales. *Vet Rec*. 1992; **131**: 337–42.
- 3 Huchinson R. Myiasis and control. 1998. Available at: <http://www.roberth.u-net.com/myiasis.html>.
- 4 Corwin RM, Nahm J. Sheep nasal botfly. University of Missouri College of Veterinary Medicine. 1997. Available at: <http://www.missouri.edu/~vmicroc/Arthropods/Diptera/Oestrus.htm>.
- 5 Duriez T. Cours en ligne de parasitologie, laboratoire de parasitologie, faculté de pharmacie Lille. 2001. Available at: <http://arachosia.univlille2.fr/labos/parasito/Internat/courspar/myiases.html>.
- 6 Dorchies P. Comparative physiopathology of *Oestrus ovis* (Linne 1761) myiasis in man and animals [in French]. *Bull Acad Natl Med*. 1997; **181**: 673–84.
- 7 Beristain X, Alkorta M, Egnasa L, et al. Nasopharyngeal myiasis by third stage larvae of *Oestrus ovis* [in Spanish]. *Enferm Infecc Microbiol Clin*. 2001; **19**: 86–7.
- 8 Lucientes J, Clavel A, Ferrer-Dufol M, et al. Short report: one case of nasal human myiasis caused by third stage instar larvae of *Oestrus ovis*. *Am J Trop Med Hyg*. 1997; **56**: 608–9.
- 9 Macdonald PJ, Chan C, Dickson J, et al. Ophthalmomyiasis and nasal myiasis in New Zealand: a case series. *N Z Med J*. 1999; **112**: 445–7.
- 10 Reingold WJ, Robin JB, Leipa D, et al. *Oestrus ovis* ophthalmomyiasis externa. *Am J Ophthalmol*. 1984; **97**: 7–10.
- 11 Cepeda-Palacios R, Scholl PJ. Factors affecting the larvipositional activity of *Oestrus ovis* gravid females (Diptera: oestridae). *Vet Parasitol*. 2000; **91**: 93–105.
- 12 Lucientes J, Castello JA, Ferrer LM, et al. Efficacy of orally administered ivermectin against larval stages of *Oestrus ovis* in sheep. *Vet Parasitol*. 1998; **75**: 255–9.