

Case Report

Genital myiasis of a sheep by *Wohlfahrtia magnifica*, in Ghamsar, Kashan, Iran

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Abstract:

Obligatory myiasis is invasion of vertebrate live tissue by fly larvae. This is a case report of genital myiasis caused by *Wohlfahrtia magnifica* in a sheep from Ghazaan village, near Ghamsar, in south of Kashan town, Iran. A sheep separated from its flock during grazing because of anorexia. Physical exam revealed genital myiasis in animal. Larvae of fly had caused a deep wound in genital organ of this sheep. All the larvae were removed from wound and transported to Entomology laboratory of Environmental Health Group, Kashan Medical Sciences University. Laboratory tests determined that larvae belongs to *Wohlfahrtia magnifica* species. This is the first report of genital myiasis of sheep in Iran. After removing larvae, the wound was washed with Betadine a few times, and topical antibiotics were administered. The wound improved after a few days. The collected larvae were cultivated in a culture medium with fresh meat, reached their maturity, and transformed to pupa. Pupa amounted in laboratory temperature after 5 days. Adult fly was mounted on a stereomicroscope and diagnosed as *Wohlfahrtia magnifica*.

Key words: sheep; *Wohlfahrtia magnifica*; fly larvae; genital myiasis

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Introduction

Myiasis described as any harm caused by dipterous especially fly in organs or tissues of vertebrate animals (live or dead tissues). Fly larvae feed from living or dead tissues of animal, which cause serious harm to animal. Based on infested organ of human or animal the infestation call coetaneous myiasis, orbital myiasis, nasopharynx myiasis, and so on^{1,2}.

Flies from Calliphoridae, Sarcophagidae and Cuterebridae families cause most of the myiasis. Myiasis caused by them is divided into obligatory, optional and accidental type^{3,4}. In obligatory myiasis, it is essential for fly larvae to live on a living host. In the optional myiasis, larvae invaded animal corpse, but in especial condition they can infest live host, which is called accidental myiasis. GI myiasis in human is an example of accidental myiasis. Cutaneous myiasis besides harming skin of domestic animals, reduce economical value of their leather.

Wohlfahrtia flies belong to Sarcophagidae family, and induce obligatory myiasis. The mature fly length 8 to 14 millimeter; have gray color with black circle spots on their abdomen. *Wohlfahrtia* fly has worldwide distribution², it is reported from Mediterranean, South and East Europe, North Africa, and China⁵. Sheep is its main host. Cat and dog were reported as the important reservoirs in the epidemiology of wohlfahrtiosis in Hungary⁶. Recently human myiasis by wohlfahrtiosis has been reported from Europe and Asia⁷⁻¹¹. Genital myiasis caused by wohlfahrtiosis was also reported from Sicily, Italy¹². In Iran like other countries beside domestic animal infestation, myiasis has been also reported in human. In Khozestan province, Behbahan area myiasis were observed in sheep, cow, goat, horse, dog and donkey⁹. Researchers have also reported wohlfahrtiosis infestation among wild animals¹⁰. In Iran, human

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myiasis has been reported sporadically. *Wohlfahrtia magnifica*, which cause obligatory myiasis, induce cutaneous myiasis, myiasis in ear, nose and eye of livestock and human. Therefore reporting any, contamination by *Wohlfahrtia magnifica* has its especial value. This is a case report of wohlfahrtiosis inducing genital myiasis in sheep, its diagnosis, and treatment.

Case Report

In August 2010 during examination of a herd of 150 goats and sheep, in Ghazaan area, a myiasis infestation in genital organ of a sheep was detected. This area is located in north east of Isfahan province and in south of Kashan town. The sheep was a 4-year old ewe with severe infection in vulvar and perineal area. Wound, edema and larva activity was obvious. After examination, larvae were collected alive in a container. The wound was washed with betadine; necrotic tissues, discharge, and pus were removed; and after disinfection wound was treated with topical antibiotics. The larvae were transported to the laboratory of Environmental Health Group of Kashan Medical Sciences University. The larvae were kept in special containers, and were fed to reach their maturity. The larvae were diagnosed with stereomicroscope and taxonomic keys by/of Zumpt (1965). To diagnose the genus and species of fly, baby flies were dissected under stereomicroscope, anterior and posterior respiratory holes and head-pharyngeal skeleton were separated from body. Each of separated parts was placed on the slides/lam and was examined under light microscope. The larvae were cultured on an environment with meat, and developed to pupa. Using diagnosis keys, morphologic characteristics of larvae, and pupa opening process, the cause of wound diagnosed as *Wohlfahrtia magnifica*. The collected pupas that were kept in normal laboratory temperature grow to adult fly, which with morphologic assessment diagnosed as *Wohlfahrtia magnific*.



Figure 1: Pupa of *Wohlfahrtia magnifica* fly



Figure 2: Adult fly of *Wohlfahrtia magnifica*



Figure 3: Abdominal pattern of *Wohlfahrtia magnifica* adult fly

Discussion

First time Wohlfahrt removed *Wohlfahrtia magnifica* babies from human eye in 1771⁴. Portschinsky in 1916 chose the scientific name for this fly¹³. *Wohlfahrtia* is one of the flies inducing obligatory myiasis and like other members of *Sarcophaga* family lay larvae. Fertile female fly place her first stage larvae around wounds or natural holes /pores of host. Larvae invade host live tissue and feed from it. After 5 - 7 days, the larvae finish their three stages, fall to the ground, penetrate the soil, and enter pupa stage. In warm weather of summer, adult fly will exit from pupa after 5-15 days¹⁴. Myiasis induced by *W. magnifica* is reported from North Africa, former Russia, Spain, Israel, Turkey, Hungary, and former Yugoslavia in both human and animal^{4,6,15}. Navidpouer et al reported myiasis caused by *W. magnifica* from Khozestan, Iran in 1996¹⁶. Gingival myi-

asis by *W. magnifica* was reported in a 4-year old Iranian child¹⁷. Aydenizoz and Dik reported a gingival myiasis in a lamb caused by *W. magnifica* in 2008¹⁸. The studies show that people with mental problems are more exposed to myiasis because of lack of self-protection. Mental deficiencies, high age and the habit of sleeping with open mouth, are some of the most important factors predisposing the person to oral myiasis¹⁹. Wohlfahrtiosis is the most important cause of myiasis in the south Palaearctic area²⁰. In last decade, myiasis has expanded in some Mediterranean countries, and it was reported for the first time from some other countries like Italy²¹. Economic costs related to Wohlfahrtiosis including medication, work absent, and production losses are estimated around five Euros per each case⁵. Besides direct cost of Wohlfahrtiosis, the indirect cost of it because of decreasing national productivity must be considered as well^{22,23}. Therefore, the medical importance of Wohlfahrtiosis is very obvious and serious⁵. All aspects of myiasis caused by Wohlfahrtiosis is not known properly yet. Physician, health care providers, veterinarians and those who in endemic countries face repeated occurrence of this disease, have significant role in diagnosing it. Available data show that Wohlfahrtiosis is endemic in some areas²⁰.

Having a wound is essential for cutaneous myiasis in animals. Superficial injuries or deep wounds in animals are main factors, which attract fly. Skin ruptures caused by hitting, scratches from sharp objects, place of carnivorous animals bite, and any skin injury attracts flies that cause myiasis. Furthermore, wound discharge or any injury cause fermentation and decompose of skin superficial proteins by available microorganism, induce skin decay and produce a non-pleasant smell that attracts flies. Flies that cause dermal myiasis are active in area with relatively warm and moist climate^{3,4,24}. Kashan is a warm and dry part of country, which located in mountain area and provide suitable environment for myiasis induction in human or livestock. In tropical regions, flies are active throughout the year.

Conclusion

Since flies are attracted to the wounds and injury areas because of smell induced by microorganisms activity, regular examination of farm animals during grazing, will reduce the number and extent of injuries caused by flies. Examining restless and upset animals during grazing will help to recognize infested livestock. The risk of myiasis as a common zoonotic disease in tropical and subtropical climates is high; therefore, it is essential to educate people who are involved with domestic animals.

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