

## Nasal myiasis due to *Lucilia sericata* (Meigen, 1826) from Iran: A case report

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**Abstract.** Although not very common, human myiasis occurs more in developing tropical countries. A variety of dipterans cause nasal myiasis including the family Caliphoridae. In this report a case of nasal myiasis due to *Lucilia sericata* is reported for the first time, in a 74-year old patient from Mazandaran Heart Centre, North of Iran. The patient was originally admitted to the Mazandaran Heart Centre due to cardiac arrest and cerebral ischemia with diminishing consciousness. Because of the emergence of large number of maggots from his left nostril and the suspicion of infectious diseases, he was referred to the ICU of the Razi Infectious Diseases Hospital the next day. The larvae were identified as *L. sericata*. The conditions of the patient were medicated and the myiasis was treated by washing with 2% solution of xylocaine and oral administration of 2 mg tablets of ivermectin.

### INTRODUCTION

Myiasis is defined as the invasion of human and animal organs and tissues by dipteran larvae (Zumpt, 1965) causing either facultative or obligatory myiasis (Service, 2008). It usually occurs in domesticated animals such as sheep, goats, cows and other vertebrates, but its occurrence in humans is not as common and mostly restricted to tropical developing countries (Aydin *et al.*, 2006a). Clinically it has a range of impacts on the human host from benign and symptomless to life threatening (Ciftcioglu *et al.*, 1997). Different types of myiasis have been reported from different countries (Maurice, 1947). In Iran, several types of myiasis have been reported which are summarized in Table 1.

Among these types of myiasis, nasal form is relatively rare (Quesada *et al.*, 1990). Nasal myiasis caused by *Lucilia sericata* has not

yet been reported from Iran. In this report, nasal myiasis is described in a patient admitted to Cardiac Care Unit (CCU) of Mazandaran Heart Centre in North of Iran.

### Case report

The patient was a 74-year old man originally admitted to CCU of Mazandaran Heart Centre in June 2010 because of cardiac arrest and cerebral ischemia, and diminishing consciousness. In the same day of admission, large number of larvae (all together about 100) emerged from his left nostril with plenty of viscose mucorrhea. The patient was referred and admitted to the Intensive Care Unit (ICU) of the Razi Infectious Diseases Hospital in comatose condition the next day. The patient was diabetic as well as hypertensive, both conditions were medicated. Physical examination showed no abnormality other than being in comatose condition. All laboratory tests were normal.

Radiography of the sinuses and chest, coronal scan of sinuses and brain CT scan were all normal. Sodium valproate and insulin were administered for cerebral ischemia and diabetes mellitus.

The larvae were sent to the Entomology laboratory and definitely identified as *L. sericata* (Maurice, 1947), based on the larval characteristics such as the preitreme of the posterior spiracles being complete and enclosing the button.

The symptoms of myiasis in our case were mild and as he was in comatose condition, hence no complaint. The patient did not make any particular complaint before going to comatose condition. No wound, especial discharge or bleeding was observed. As larval emergence from the left nostril was observed at the same day of hospitalization, nosocomial myiasis is ruled out. Although the patient was from a rural area with the main occupation of animal husbandry and farming, hence being in contact with myiasis causing flies, the exact mechanism of infestation is not clear.

The nose of the patient was washed with 2% solution of xylocaine and 2-mg ivermectin tablets were administered. After two days,

no more larvae were seen in the nostrils. The patient's general condition improved and discharged with instructions and prescription to control his chronic illnesses.

## DISCUSSION

Nasal myiasis is the infestation of nostrils by dipteran larvae of different species. The disease is more common in tropical and sub-tropical areas of the world (Aydin *et al.*, 2006a). Different dipteran species are involved in nasal myiasis including *Osterus ovis* (Favier, 1958; Delhaes *et al.*, 2001), *Chrysomya bezziana* (Lee *et al.*, 2005), *Cochliomyia hominivorax* (Couppie *et al.*, 2005), *Drosophila melanogaster* (Aydin *et al.*, 2006b) and *Lucilia sericata* (Daniel *et al.*, 1994; Beckendorf *et al.*, 2002; Hira *et al.*, 2004; Kim *et al.*, 2009). Although different types of myiasis including nasal myiasis have been reported from Iran (Table 1) this is the first case of nasal myiasis caused by *L. sericata* from Iran. The country is situated in sub-tropical area and myiasis causing flies in the family Caliphoridae are widespread especially in the countryside where the main

Table 1. Reports of human myiasis, the dipteran species involved and the references from Iran

Type of myiasis	Causative agent	Reference
Auricular myiasis	<i>Chrysomya bezziana</i>	(Talari <i>et al.</i> , 2002)
	<i>Sarcophaga haemorrhoidalis</i>	(Tirgari <i>et al.</i> , 1977)
Gingival myiasis	<i>Wohlfahrtia magnifica</i>	(Mohammadzadeh <i>et al.</i> , 2008)
Head skin myiasis	<i>Chrysomya bezziana</i>	(Soleimani Ahmadi <i>et al.</i> , 2009)
Nasal myiasis	<i>Eristalis tenax</i>	(Salimi <i>et al.</i> , 2010)
Ocular myiasis	<i>Oestrus ovis</i>	(Minar, 1976; Janbakhsh <i>et al.</i> , 1977; Khataminia & Elyasi, 1999)
	<i>Sarcophaga</i> sp.	(Razmjou <i>et al.</i> , 2007)
Oral mucosa myiasis	<i>Oestrus ovis</i>	(Hakimi & Yazdi, 2002)
	<i>Lucilia sericata</i>	(Yaghoobi <i>et al.</i> , 2005)
Pharyngeal myiasis	Not specified	(Karimi & Vahidi, 1999)
Urogenital myiasis	<i>Chrysomya bezziana</i>	(Jdalayer <i>et al.</i> , 1978)

occupation of people is animal husbandry and agriculture, making them vulnerable to infestation by being in contact with flies.

The identification of Caliphoridae larvae relies mainly on morphological examination of their posterior spiracles (Kim *et al.*, 2009). The microscopic examination of the pretreme of the posterior spiracles of the larvae showed that among other characteristics, the pretreme is complete and encloses the button, this confirms the specimens as *L. sericata*.

*Lucilia sericata* usually causes wound myiasis, but it can also cause nasal myiasis (Derraik *et al.*, 2010). Nosocomial nasal myiasis in comatose patients caused by *L. sericata* has been reported elsewhere (Hira *et al.*, 2004). As the third instar larvae were in the nostril of our patient on the first day of admission to hospital, nosocomial infestation was ruled out. This was because in optimum temperature of about 28°C, (the temperature in the area in June, when the case was presented) the eggs hatch within 10-12 hours and that the larvae take approximately 2.5 days to reach the third larval stage (Hira *et al.*, 2004). The patient was from the countryside (where flies are common) and his occupation was in animal husbandry and farming, both involving work in the open. Therefore, the patient must have been infested in the countryside before being admitted to the hospital.

Nasal myiasis has a wide range of outcomes from being benign and causing embarrassment and stress to the patient, relatives, and health care providers, or life threatening as the larvae may penetrate into the brain (Kim *et al.*, 2009). The symptoms of nasal myiasis include foreign body sensation, itching, nasal discharge, sneezing and even more severe respiratory manifestations (Wolfelschneider & Wiedemann, 1996). The symptoms of nasal myiasis in our case were mild as there was no specific complaint before he became comatose. The stroke, diabetes and hypertension of the patient were brought under control by administering appropriate medicines. The standard treatment of the nasal myiasis is manual removal of the larvae, however, systemic use

of ivermectin is recommended (Shinohara *et al.*, 2004). In our case, oral administration of 2 mg ivermectin tablets and also washing the nostril with 2% solution of xylocaine (Derraik *et al.*, 2010) cured the myiasis.

As environmental health is important in controlling the population of the flies in order to control myiasis in the open areas as well as nosocomial myiasis (Beckendorf *et al.*, 2002), it can be concluded that public education about myiasis and the role of flies in its occurrence as well as keeping to a high level of environmental health standards in living and working places and hospitals is crucially important to prevent and manage myiasis.

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