

Urogenital (by *Psychoda albipennis* (Diptera: Nematocera)) and Intestinal Myiasis (by *Fannia canicularis* (Diptera: Fanniidae)) in Kırıkkale/Turkey: Report Two CasesMeral Aydenizoz^{1,a,*}, Sami Gokpinar^{1,b}¹Kırıkkale University, Faculty of Veterinary Medicine, Department of Parasitology, Kırıkkale, Turkey^aORCID: 0000-0002-1270-772X; ^bORCID: 0000-0001-7071-869X

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Abstract

Urinary myiasis is mainly caused by the larvae of *Psychoda albipennis*, *Fannia scalaris*, *Musca* spp., *Sarcophaga* spp., *Lucilia* spp., *Wohlfahrtia* spp., *Calliphora* spp., and rarely by *Eristalis tenax*, *Cordylobia anthropophaga* and *Clogmia albipunctata*. Intestinal myiasis is caused by the larvae of *Fannia canicularis*, *Eristalis tenax*, *Musca domestica*, *Calliphora vicina* and rarely by *Clogmia (Telmatoscopus) albipunctatus*. The first case is a 47-year-old woman with difficulty in urination, frequent urination, haematuria, nausea, vomiting, anorexia, urinary incontinence and occasional small, moving, dark colored worm-like organisms in her urine for 4-5 months. The second case is an 8-year-old boy who complained of yellowish worm-like organisms in his feces, teeth grinding and to saliva in sleep for some time. These patients were referred to our department from the Department of Infectious Diseases of Medical Faculty Hospital in Kırıkkale University. The larvae brought by the patient in separate containers were examined macroscopically and microscopically. The examined larvae were identified as *Psychoda albipennis* in urine and *Fannia canicularis* in faeces. In these cases, *Psychoda albipennis* was the second case in urine, while *Fannia canicularis* was the first case in feces in Kırıkkale. It was found interesting that the mother and her son had different myiasis factors at the same time. This study shed slight on the medical importance of urinary and intestinal myiasis.

Keywords: *Fannia canicularis*, Intestinal myiasis, *Psychoda albipennis*, Urinary myiasis, Kırıkkale/Turkey.**INTRODUCTION**

Myiasis is a Greek word, "Mya" means Greek fly and "myiasis" is "fly disease". Myiasis term was first proposed by Hope (1840). Myiasis can be classified as obligatory, facultative, or accidental based on the infestation of different organs and tissues of human and animals with fly larvae. More than 50 species of flies have been reported as the cause of myiasis in humans (Zumpt, 1965). There have been many studies conducted on human myiasis caused by several Dipteran species in different countries (Tu et al. 2007; Bradbury 2010; Kovaleva et al. 2013; Shilpa et al. 2013; Ghavami and Djalilvand, 2015), including Turkey (Taylan-Ozkan et al. 2004; Mumcuoglu et al. 2005; Kaya et al. 2011; Çiçek et al. 2012; Beyhan et al. 2015; Demir et al. 2015; Karagüzel et al. 2015; Culha et al. 2016; Torun-Edis et al. 2018).

Urogenital myiasis is an accidental myiasis caused by many species of flies including Psychodidae, Muscidae, Sarcophagidae, Calliphoridae, Anisopodidae and Scinoiidae (Yones et al. 2014). *Psychoda albipennis* in Psychodidae family lives especially in moist bathrooms of houses and causes urogenital myiasis. This species is quite common in humans in Turkey (Taylan-Ozkan et al. 2004; Kaya et al. 2011; Çiçek et al. 2012; Beyhan et al. 2015; Demir et al. 2015; Karagüzel et al. 2015; Culha et al. 2016; Torun-Edis et al. 2018).

Psychoda albipennis is about 1.25 mm body-length, dark, moth-like insects. While at rest wings held roof-like over body (Zumpt, 1965). Fourth instar larva is about 3-5 mm long, cylindrical and end of the larva is like

syphon shape. Urinary myiasis is usually associated with poor hygienic measures, lack of cleanliness and disability. It may be associated with urinary symptoms as dysuria, hematuria, and obstruction of the urinary system (Taylan-Ozkan et al. 2004; Kaya et al. 2011; Çiçek et al. 2012; Beyhan et al. 2015; Demir et al. 2015; Karagüzel et al. 2015; Culha et al. 2016; Torun-Edis et al. 2018).

Intestinal myiasis occurs when the fly larvae inhabit the gastrointestinal tract and pass out in faeces. This myiasis develops when eggs or early stage larvae of the dipteran fly, deposited on food are accidentally taken by man (Tu et al. 2007; Francesconia and Lupi, 2012). Intestinal myiasis agents are associated with *Sarcophaga* sp., *Oestrus* sp. (Ahmad et al. 2011; Subramanya Supram et al. 2015), *Musca domestica* (Achra et al. 2015), *Eristalis tenax* (Aguilera et al. 1999; Clavel et al. 2011), *Fannia canicularis* (Karabiber et al. 2010), *Megaselia*, *Muscina stabulans*, *Sarcophaga haemorrhoidalis* (Udgaonkar et al. 2012).

Fannia canicularis is spread worldwide. The lesser house fly or little house fly, *F. canicularis*, is a slim fly reaching a length of from 4 to 6 mm. The adults are common inhabitants of houses, where they are attracted to lights. The larvae of *F. canicularis* develop in a variety of decaying organic matter, including carrion (Zumpt, 1965). This type of myiasis develops when eggs or early stage larvae of the fly, deposited on food are inadvertently taken by man (Tu et al. 2007; Francesconia and Lupi, 2012).

MATERIALS AND METHODS

Case 1 and Case 2 Histories

The first case is a 47-year-old woman with difficulty in urination, frequent urination, haematuria, nausea, vomiting, anorexia, urinary incontinence and occasional small, moving, dark colored worm-like organisms in her urine for 4-5 months. The second case is an 8-year-old boy who complained of yellowish worm-like organisms in his feces, teeth grinding and to saliva in sleep for some time. These patients were referred to our department from the Department of Infectious Diseases of Medical Faculty Hospital in Kirikkale University. The larvae brought by the patient in separate containers were examined macroscopically and microscopically. milk at that time.

RESULTS

The examined larvae were identified as *Psychoda albipennis* in urine (Fig. 1) and *Fannia canicularis* in faeces (Fig. 2).



Figure 1. *Psychoda albipennis* larvae (Olympus SZ61, Japan; x4.5)



Figure 2. *Fannia canicularis* larvae (Olympus SZ61, Japan; x4.5)

DISCUSSION AND CONCLUSION

Myiasis is the infestation of live humans and other vertebrate animals by fly larvae which, at least for a certain period, feed on the host's dead or living tissue, liquid body substances, or ingested food (Zumpt, 1965; Aguilera et al. 1999; Karabiber et al. 2010). About 50 species of flies have been reported as the cause of myiasis in humans (Zumpt, 1965).

Urogenital and intestinal myiasis are expressed pseudomyiasis or accidental myiasis. Especially urogenital myiasis is more prevalent than intestinal myiasis in human. The reason for this is due to the lack of hygiene of urogenital myiasis and the presence of humid environments such as toilet and bathrooms which *P. albipennis*'s habitat. Fourth instar larva of *P. albipennis* is about 3-5 mm long, cylindrical and end of the larva is like syphon shape. The larvae of *F. canicularis* develop in a variety of decaying organic matter, including carrion (Zumpt, 1965).

The first case was a 47-year-old woman with difficulty in urination, frequent urination, haematuria, nausea, vomiting, anorexia, urinary incontinence and occasional small, moving, dark colored worm-like organisms in her urine for 4-5 months. The same patient's son had complained that his faeces had yellowish-colored organisms and with teeth grinding and to saliva in sleep for some time. These patients were referred to our department from the Department of Infectious Diseases of Medical Faculty Hospital in Kirikkale University. The larvae were examined macroscopically and microscopically. The larvae were *P. albipennis* in urine and *F. canicularis* in faeces. Fourth instar larva of *P. albipennis* was about 3-5 mm long, cylindrical and end of the larva is like syphon shape. *Fannia canicularis* was in the third instar larval stage. It was minute, brown, and flattened dorsoventrally in shape.

These type of myiasis cases are represented from time to time in different countries (Aguilera et al. 1999; Bradbury 2010; Ahmad et al. 2011; Clavel et al. 2011; Kovaleva et al. 2013; Shilpa et al. 2013; Achra et al. 2015; Ghavami and Djalilvand, 2015) and in Turkey (Mumcuoglu et al. 2005; Karabiber et al. 2010; Kaya et al. 2011; Çiçek et al. 2012; Beyhan et al. 2015; Demir et al. 2015; Karagüzel et al. 2015; Culha et al. 2016; Torun-Edis et al. 2018).

Urogenital myiasis is common over the worldwide and Turkey. Our first case was identified as *P. albipennis* in a 47-year-old woman. Urogenital myiasis caused by *P. albipennis* with the case was reported second case in Kirikkale (Torun-Edis et al. 2018).

Intestinal myiasis in humans is probably related to ingestion of undercooked food or water containing fly larvae. There are a few reports intestinal infection (Aguilera et al. 1999; Bradbury 2010; Ahmad et al. 2011; Clavel et al. 2011; Udgaonkar et al. 2012; Achra et al. 2015; Subramanya Supram et al. 2015). Karabiber et al., (2010) were reported intestinal myiasis caused by *F. canicularis* in Turkey. In the other our case, *F. canicularis* was found also in the intestine. Intestinal myiasis caused by *F. canicularis* were reported at first time in Kirikkale. These two cases were evaluated as a condition caused by hygiene failure and it was suggested that patients should give due care. These cases were presented because it is interesting that two individuals from the same family were infected with different myiasis factors at the same time.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest in the content of the article.

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