

Case Report

Wound Myiasis due to *Musca domestica* (Diptera: Muscidae) in Persian Horned Viper, *Pseudocerastes persicus* (Squamata: Viperidae)

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Abstract

A case of myiasis due to *Musca domestica* describes in *Pseudocerastes persicus* for the first time. The snake was found in Bari Karafs, Kashan, Iran, with a lesion on its body. Fourteen live larvae of *M. domestica* removed from its wound. This is the first report of a new larval habitat of *M. domestica*.

Keywords: Myiasis, *Pseudocerastes persicus*, *Musca domestica*, Muscidae

Introduction

Housefly, *Musca domestica* Linnaeus, is a synanthropic species and lives in close relations to human. It is usually considered as a mechanical vector of diseases and is capable to transfer hundreds of pathogenic organisms to human. *Musca domestica* is equally attracted to human food sources or animal wastes (Nmorsi et al. 2007, Butler et al. 2010). Housefly as an opportunistic species can deposit its eggs in various types of moist, decaying organic materials such as compost, garbage, feces, fresh and decaying fruit, most human food, and even carrion. In some cases females lay their eggs on soft tissue wound(s) of human or other animals, called myiasis.

Myiasis is an important parasitic infestation affecting man and domestic or wild animals in many parts of the world. It can define as "the infestation of live vertebrate animals with dipterous 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). It may occur in any part of the world and according to the species of fly may involve obligate, facultative or in some cases accidental parasitic infestations. Although *M. domestica* is found everywhere, but the case of facultative myiasis of this species is rare. There are just few case reports of facultative myiasis in human caused by *M. domestica* (Dogra and Mahajan 2010). However, intestinal myiasis, which is accidental myiasis or pseudomyiasis, has been reported in human (Sehgal et al. 2002). Human cases of pseudomyiasis occur when the larvae contaminates food or drink and passing through the alimentary canal. Most cases of myiasis due to *M. domestica* are facultative myiasis, which may occasionally contaminate living tissue. Dermal and sub-dermal myiasis is an important myiasis in animals, which are the invasion of Diptera larvae to skin tissues.

Dermal myiasis has been reported in sheep caused by *M. domestica* in the Middle East (Amin et al. 1997, Schnur et al. 2009).

In the present communication, a rare case of snake myiasis due to *M. domestica* describes.

Case report

A 70 cm of Persian horned viper was presented to Medical Entomology lab, Department of Environment Health, Kashan University of Medical Sciences in summer 2010. The snake was captured in Bari Karafs (34° 02' N, 51° 03' E) near Mashhad Ardehal in west of Kashan, Isfahan Province, central of Iran. The area has a warm and dry weather and marginalized from the North and East to the desert. The snake was identified *Pseudocerastes persicus* using the key of Mc Diarmid et al. 1999. It had a broad head with the short and rounded snout. The supraorbital hornlike structures was obvious above of each its eye. The color of the viper was gray. The snake had a lesion of 10 mm diameter on the dorsal surface of the posterior mid-body (Fig. 1A, B). The wound started to be infected shortly thereafter. A close up view revealed its infestation with larvae of dipterous fly. After removing all larvae, they kept to complete their metamorphosis. Ten live larvae and 4 pupae of dipterous fly were subject to the further study (Fig. 1C). The collected larvae were processed for micro-slide preparation of their spiracles. The pupae were kept in a dry container in laboratory condition to emerge the adult fly. The adult flies emerged after 3 days. The identification key of Zumpt (1965) was used to identify the larvae and adults. The larvae were creamy-white and cylindrical with broad and flattened posterior end and tapering anteriorly toward the head. Each larva had one pair of dark hooks, with 12 apparent segments. The openings of posterior spiracles had sinuous slits and the

peritreme of each spiracle was "D" shape with a button. The four adults were gray, with four longitudinal dark lines on the back. The morphological study of the spiracles of fourth instar larvae and the emerged adults revealed that all were *Musca domestica*.

The snake had poor appetite while it was wounded. The wound washed and cleaned with 10% povidone-iodine and then treated with tetracycline topical ointment 3%. The snake had been weakened when it was first found and was not fed during the first week in the laboratory. In the second week, live rock geckoes were accessible to the snake in its container. The Persian horned viper started to eat its live prey soon after that. After three weeks treatment and taking care of the snake, it had been recovered but a scar remained on the skin (Fig. 1D). The Persian horned viper is still alive and is kept at Department of Environment Health, Kashan University of Medical Sciences for further study.



Fig. 1. A lesion with 10 mm diameter in the dorsal surface of Persian horned viper (A and B), larvae and pupae of the dipterous fly after culturing, out of the lesion (C), picture of the same area three weeks after treatment (D) (original photos)

Discussion

Snake myiasis has been reported rarely. Although dipterous larvae in dead body of animals and snake carcasses are usual, but few myiasis among live snakes has been reported. An earlier report described a case of dermal myiasis due to *Cuterebra* spp. (Cutebriidae) in *Crotalus viridis abyssus* (Garrigues 1964). A case of snake myiasis caused by *Megaselia scalaris* (Phoridae) was described in Brazil (Da Silva et al. 1999). In this study, we described a rare snake dermal myiasis due to *M. domestica* in central Iran. *Musca domestica* has been incriminated as a myiasis agent in many parts of the world. It has been found in human or animals tissues. Although the adult flies are not parasitic but they can lay their eggs on necrotic tissues or wounds. Such kind of myiasis is unusual in good sanitation and clean environment; however, some cases occurred on domestic or wild animals.

Persian horned viper is distributed throughout the Middle East and usually lives far from human in the deserts. *Pseudocerastes persicus* is a native species in Iran and its myiasis has not been seen before. In this case, *M. domestica* has been attracted to the infected wound of the snake. The female housefly deposited her eggs in the moist and decaying snake wound and then the larvae migrated into the deep part of the wound. Injuries in man and animals are the most important sources to attract gravid flies. In wild animal injuries due to fighting, wounds and the site of the ticks or other arthropods bite are potential sources for invasive of dipterous flies. Moreover, rat bite injury may provide substrate for the developing larvae in snake.

Myiasis is a widespread and completely preventable veterinary problem in livestock or pet animals. Besides, the infestations of wild animals with dipterous larvae can affect health of livestock or pet animals as well as

human. Although, fly larvae have been found in snake carcass (Moretti et al. 2009), this species commonly have no myiasis. We suppose this myiasis occurred because the snake previously had been wounded and the moist around the wound attracted the female fly to laying her eggs. This report reveals the new larval habitat of *M. domestica* that previously has not reported. In this case, *Pseudocerastes persicus* saved successfully with washing the wound with a disinfectant and treatment with topical ointment antibiotic. However, in all cases of dermal myiasis early treatment is a key factor in treatment and prevention of the problem.

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