Gingival myiasis of camel (*Camelus dromedarius*) caused by *Wohlfahrtia magnifica*

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Abstract. Myiasis is defined as the infestation of living tissues of vertebrates by larvae of flies. Gingival myiasis is an uncommon type of myiasis. During the inspection of the teeth of slaughtered camels (in Mashhad, Iran) for a research project, a gingival myiasis was seen in a 15 year-old camel. Eight larvae were removed from the lesions and sent to a parasitology laboratory for identification. Affected area of the gingiva was cut and placed in 10% formalin, then sent to pathology laboratory for histopathological studies. Parasitological studies revealed the causative agents of this condition were larvae of *Wohlfahrtia magnifica* (Diptera: Sarcophagidae). The affected gingiva showed hyperplasia of squamous epithelial tissue and acanthosis in mucosal membrane, hyperemia and infiltration of mononuclear cells and eosinophils into lamina propria were seen. The present report is the first report of gingival myiasis in camel.

Keywords: Oral myiasis; Camel; *Wohlfahrtia magnifica*; Iran.

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Introduction

The term myiasis was used for the first time in 1840 by Hope (Zumpt, 1965). Myiasis is defined as the infestation of living tissues of vertebrates by larvae of flies (Zumpt, 1965). Gingival myiasis is an uncommon type of myiasis (Droma et al., 2007). Review of literature showed that there are only few reports of gingival myiasis in animals (Aydenizöz and Dik, 2008; Dik et al., 2012).

According to the statistics of Iranian Veterinary Organization, there are 154,000 camels in Iran. Most of them are one-humped and live mainly in east of Iran. Having high quality meat, shaggy wool, milk and ability to carry cargo and passengers across the desert are special features of these animals. Due to the permanent presence of camels in the deserts and lack of adequate care to them in Iran, they are vulnerable to ectoparasites. In the current paper a case of gingival myiasis in a one-humped camel is presented from Iran.

Presentation of the case

In May 2012 during the inspection of the teeth of slaughtered camels for a research project a gingival myiasis was seen in a camel. According to her dental formula the age of the slaughtered camel was estimated to be 15
years. Myiasis had involved the gingiva of lateral side of the right canine tooth of lower jaw and this involvement had caused darkening of the gum in this area. In addition, the latter tooth was loose. In the cavity created by feeding of the larvae eight larvae were found. They were removed by forceps and they were transferred to a glass tube containing 70% ethanol and sent to parasitology laboratory. Affected area of the gingiva was removed and placed in 10% formalin for histopathological studies.

Parasitological examinations

In the parasitology laboratory, the anterior and posterior spiracles and cephalopharyngeal skeleton of larvae were separated under the stereomicroscope. After clearing of soft tissues with lactophenol, the morphological characteristics of these structures were studied under the light microscope. Speciation of larvae was done by using the identification keys of Zumpt (1965) and Martinez et al. (1989).

Histopathological examinations

Sections of gum were cut and stained with haematoxylin and eosin for histopathological examination.

Results

Examinations by microscopy of the spiracles and cephalopharyngeal skeletons confirmed the larvae were third stage larvae of Wohlfahrtia magnifica (figures 1, 2, 3).

Discussion

The histopathological studies showed hyperplasia of squamous epithelial tissue and acanthosis in mucosal membrane of affected gingiva. Furthermore, hyperemia and the presence of inflammatory cells, including a significant number of mononuclear cells and eosinophils in lamina propria were seen. These findings demonstrated a localized inflammatory reaction against the parasite larvae.

For the first time, the larvae of this fly were removed from the eye of a patient by Wohlfahrt in 1771. He described and figured the removed larvae (Zumpt, 1965). W. magnifica, like other members of family Sarcophagidae is larviparous. The female fly deposits first stage larvae near the lesions on cutaneous tissues or natural orifices of living host. The larval period lasts 5-7 days (Zumpt, 1965), after which the larvae leave the host and fall down to the ground into which they burrow prior to pupate. Adult flies emerge after 5-15 days at summer temperature (Soler-Cruz et al., 1966).
According to Zumpt (1965) among domestic animals, camels and sheep especially suffer from attacks of *W. magnifica*. This fly is found in the Mediterranean, southeastern Europe, and throughout the Middle East to Asiatic Russia and China (Beaver et al., 1984). Myiasis by larvae of this fly have been reported from North Africa, former USSR, Spain, Israel, Turkey, Morocco, Hungary and the former Yugoslavia in human and animals (Zumpt, 1965; Farkas et al., 2009). Wohlfahrtiosis has been reported by Navidpour et al. (1996) in animals from Iran.

Aydenizöz and Dik (2008) and Dik et al. (2012) reported two cases of gingival myiasis in a lamb and a sheep caused by *W. magnifica* from Turkey.

Oryan et al. (2008) in a survey on pathological effects of *Cephalopina titillator* larvae in camels demonstrated infiltration of mononuclear cells and eosinophils into mucosal and sub mucosal tissues. They reported the blood vessels of the affected area were hyperemic. In a study similar to the latter survey, infiltration of eosinophils, macrophages and lymphocytes into sub mucosal tissue have been reported (Shakerian et al., 2011). These findings are in close agreement with results of the histopathological findings in current study.

To our knowledge the present report is the first report of gingival myiasis in camel caused by *W. magnifica*.

References


