



ORIGINAL ARTICLE

Pharmacological Management of Gastric Myiasis in a Lion

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Abstract

Myiasis is the infection which occurs due to various fly (dipterous) larvae in vertebrates' tissues (humans, domestic/wild animals). Most of Gasterophilus species are obligate parasites of animal's including donkeys, horses, rhinoceroses, zebra and elephants. The present case study is about gastric myiasis due to infestation of Gasterophilus in an old lion in a zoo in Safari Zoo Lahore. There are few reports of Myiasis in lions and the present report is the first case study of gastric Myiasis in lion in Pakistan. In this present study wound myiasis in lioness was successfully managed at Safari Zoo Lahore.

Keywords

Myiasis
Dipterous
Gasterophilus
Lion
Safari Zoo

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Introduction

Wound Myiasis infestation occurs due to fly larvae which get their food from host tissues and cause traumatizing injury. There are greater chances of infestation in cattle and pigs and pets (dogs and cats) as well, which results huge economic losses and injuries to animals. In equine out of 9 species of Gasterophilus 6 species are the main reason of gastrointestinal myiasis (Wall and Shearer 2001). Colwell et al. 2007 described that these species are formerly confined to the area of Afrotropical and Palearctic, but *G. haemorrhoidalis*, *G. intestinalis* and *G. nasalis*, are reported to be distributed throughout the world (Zumpt 1965). The bodies of mature flies are covered with yellowish hairs with length 11–15 mm and are not parasitic (Wall and Shearer 2001). Generally, the life cycle of all the species is alike. The eggs are generally placed on the hairs of the host in a particular body area.

The larvae move into the tissues of the host after hatching whereas 1st stage larvae hatches and moults to second stage larvae which can be present in other parts of the gut, whereas L3 remains attached to the mucosa

up to eight to ten month. Overall shapes of larvae (spines round body and hooked shape mouth parts) enable it to live in the gastrointestinal tract (Wall and Shearer 2001). *G. intestinalis* larvae are comparatively large in size from 1.27 to 1.91 cm and spines organized in two rows (Zumpt 1965, Sweeney 1990). The various reports of infections in rabbits, canines and pigs are reported by (Ipek & İpek, 2012). Some cases of gastric myiasis are also reported in other countries among these such a case (*G. intestinalis*) was reported by (Ganjali & Keighobadi, 2016) in a lion of Sistan zoo, Southeast Iran. In this present study gastric myiasis in an old lion was successfully treated in safari zoo Lahore, Pakistan.

Materials and Methods

The purpose of this study was to investigate the presence of *G. intestinalis* in old lioness named Kallo stomach (parturated four times) in Safari Zoo, Lahore. Lioness was observed continuously licking her tail area near sacral region and was showing signs of anorexia. The combination of Xylazine hydrochloride and Ketamine hydrochloride were used for anesthetized the

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animal. Xylazine and Ketamine were given via injection (mixed in syringe). Ketamine has been and is still used in war surgery as almost perfect anesthetic and analgesic but can't be used alone as sedative. Xylazine provide drowsiness and insensitivity and ketamine to make the muscles immobilize. Xylazine was administered at dose rate of 3.5 mg/kg body weight and ketamine at dose rate of 7.5 mg/kg body weight (Stander & Morkel, 1991) for clinical examination. After achieving the anesthesia there was seen three wound holes in its tail area with heavy infestation of maggots. The forceps were used for removing maggots manually from the wound. The remaining maggots were killed by using gauze bandage dipped in turpentine oil and chloroform with the ratio of 1:1 for two hours. Turpentine oil (TT oil) has been commonly applied as disinfectants and insecticides. Chloroform used as solvent along with TT oil and it act as analgesic to reduce pain during medical procedures. Wound was also flushed with 5% seguvan solution. The wound was dressed using Povidone-iodine. The wound dressing was changed after 3rd day interval.

Results

For parasitological examination larvae were collected from the Gastrointestinal track of Lioness (Fig. 1). About sixteen larvae were taken from the stomach and 70% ethyl alcohol with 5% glycerin was used for the preservation of Larvae. Ethyl alcohol mixed with water (70% to 80% alcohol) is generally the good killer and preserver agent along with glycerin. The morphological identification of larvae was done in Parasitology Lab of Riphah College of Veterinary Sciences, Lahore, (Zumpt 1965). Stereomicroscope was used for identification of *G. intestinalis* larvae. The Larvae was thinner in shape at front end and broader from posteriorly, creamy-white in color and 5-6 mm in width and length is 10–15 mm and there were two rows of spines on segments surface.

The *G. intestinalis* lioness was treated with anti-inflammatory and antibiotics. For this purpose, injection of Oxidil 2g (Cephalosporin) I/V (slow) and Ketojet (Ketoprofen 10%) of selmore @ 7cc via IM were administered. The presence of maggots in wound was observed on 3rd day. The wound was filled with maggots with no recovery. But there was seen better clinical improvement with no maggots in the wound after ten days with treated by Ivermectin 200 µg/kg S/C injection for 2 times after week.

Discussion

Gasterophilus species has been reported in many regions of the World. Most of the larvae of *Gasterophilidae* are reported to cause equine gastric myiasis in southern Italy (Otranto et al., 2005).



Fig. 1: Maggots in the cage of lion



Fig. 2: Severe maggots at the infection site



Fig. 3: Wound due to maggots



Fig. 4: Size of maggots collected from the wound site

Gasterophilus hemorrhoidalis, G. pecorum, G. intestinalis, G. nigricornis, G. nasalis and G. inermis were found in Turkey (Gökçen et al., 2008). Prevalence of Gasterophilus haemorrhoidalis has also been reported in Brazil whereas G. intestinalis is the main cause of the myiasis infestation. (Felix et al., 2007). Khalifa et al. (2005) from Egypt reported Gasterophilus haemorrhoidalis from equines. Iranian The equine myiasis by Gasterophilus species have found in Iran while other species including G. inermis, G. nasalis and G. intestinalis were recognized. (Tavassoli and Bakht, 2012). Hall and Wall (1995) described that probable infection in equid hosts may be caused by Gasterophilus larvae, some cases are also reported in pet animals (rabbits and dogs), (SayınIpek and Ipek 2012). Furthermore, larvae of Gasterophilidae may also infect human being. (Royce et al., 1999). However, in wilds occasionally it infests and only few scientists observed it and one of such case in lion is observed by Kumar et al. (2012). In lioness gastric myiasis is the first study case reported in Pakistan.

The heamatology results demonstrated increase in the number of leukocyte count which represented the bacterial secondary infection that was countered by broad spectrum antibiotic. The larvae of blow flies usually caused traumatic myiasis in the animals. The bacterial secondary contaminations and necrotic cells not only appeal female flies in wound but also laid eggs at the moist area in the wound infections. The outer environment like urine, feces and mud are suitable environment for maggot growth. The prevalence of such type of infections is more occurred in closed condition as compared to open environment. Furthermore, the present case study may guide as an effective cure remedy of cutaneous Myiasis in big cats.

Conclusions: Gastric myiasis is an infestation of Gasterophilus larvae that can be successfully treated with Ivermectin 200 µg/kg S/C injection for two times at weekly intervals with better results as compared to antibiotic and anti-inflammatory treatment.

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