ECONOMICAL TREATMENT OF MAGGOT WOUNDS IN CAPTIVE AFRICAN LIONS: A STUDY OF 12 CASES

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ABSTRACT: Maggot wound is a common threat to felines caused by eggs of fruit flies (*Drosophila melanogaster*). The study was conducted to establish an economic treatment of maggot wounds without anesthesia in *Panthera leo* at Safari Zoo Lahore, Pakistan. In this treatment, Lions having maggot wounds were first isolated in a squeeze cage and treated with antiseptics i.e. hydrogen peroxide and pyodine. The antiseptic that was a combination of hydrogen peroxide and pyodine used against maggots' grip being pierced in the tissues. Once they lost grip, maggots were removed with sterilized forceps one by one with great care. After cleaning, the wound was left for open healing, only wound oil (herbal maggot killer) was applied. Once satisfied that no maggot is left, Mycitracin was applied, being an effective pain reliever. Pink spray (crude liquid 60ml) is a fly repellent that helps in healing wounds as well. It was concluded Mycitracin and pink spray can be used till animals recovered successfully. No side effects of these medicines were likely observed.

Keywords: *Panthera leo*, *Drosophila melanogaster*, wound oil, Safari Zoo Lahore

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INTRODUCTION

African Lion (*Panther leo*) belongs to the Felidae family of order Carnivora, listed as Vulnerable according to the International Union for Conservation of Nature (IUCN) red list of Threatened Species (Bauer *et al.,* 2015a). It is also reported that the regional population is critically endangered in Central Africa (Henschel *et al.,* 2014). Populations other than India and are Africa is listed as Endangered. Significant decrease in number and range have been reported (Bauer *et al.,* 2015b). Increased conservation of this species has been argued by various authors (Packer *et al.,* 2013; Lindsey *et al.,* 2016).

In several countries it is kept as a captive animal for their conservation as well as public amusement. It is a fascinating species for all visitors in zoos and safaris but like other felids, it is prone to many diseases in a similar way as domestic cat species. This species is prone to various infections, parasitic infestation, bacterial and viral infection and degenerative diseases. Myiasis is the parasitic infestation through dipteran larvae (mostly fruit fly *Drosophila melanogaster*) (Francesconi and Lupi, 2012) into the tissue of live animals. Larvae grow inside the organism feeding on its tissue. Infestation turns into maggot wounds if remain untreated (Hall and Farkas, 2000). It can also cause death of the animal if it remains untreated (Kumar and Raj, 2012). In Safari, animals get more prone to these wounds because they get scratches from various shrubs and bushes. It is difficult to surgically remove maggots again and again. This paper presents low-cost, non-surgical management of maggot wounds in captive lions, without using anesthesia.

MATERIALS AND METHODS

Selection of Animal and Study time: The present study was conducted on *Panthera leo* kept at the Safari Zoo Lahore, Pakistan. The study was conducted from May 2021 to Sep 2021 in the summer season as this is time for wounds particularly in high humid conditions. A total of 44 lions are found in safari zoo however, during the study period only twelve cases of *Panthera leo* were considered with wounds at different body parts details are given in Table 1.

Enclosure Size: In the Safari Zoo lions were kept in an enclosure named lion Safari having a size of 25×15 feet. There are four cages that are considered as indoor facilities while an area of 15 acres is open and considered as outdoor facility. The outdoor facility is common for all prides in which they are releases turn by turn.

Treatment: The study was conducted to establish an economic treatment of maggot wounds particularly focusing on non-surgical anesthesia free methods. Wound oil, a herbal maggot killer was applied with Mycitracin (Bacitracin/Polymyxin/Neomycin/ Lidocaine) an ointment for healing. Pink spray was used until lions recovered successfully without any complications.

TREATMENT AND DISCUSSION

A non-surgical anesthesia free method was adopted to cure maggot wounds in captive African Lions. Animals having maggot wounds were first isolated in a squeeze cage. Depth of wound pocket was recorded and treated with antiseptics i.e. hydrogen peroxide and pyodine. The antiseptic combination of hydrogen peroxide and pyodine (Povidone-iodine Solution 10% w/v) was used against the grip of maggots as they were pierced in the tissues of animals and difficult to remove. Once they lose the grip, maggots were removed with sterilized forceps one by one with great care (Fig. 1 and 2).

After cleaning the wound was left for open healing, Wound oil (100ml contains Sarla oil 60ml/Kunjad oil 10ml/Rutan jot oil 10ml/Acacia Q 5ml/Calendula Q 5ml/Hydro cotyle Q 5ml) is herbal maggot killer was applied (Fig. 2). Mycitracin (Bacitracin/Polymyxin/Neomycin/ Lidocaine) an ointment for healing was applied, once satisfied that no maggot is left behind. Pink spray (crude liquid 60ml) is fly repellent but helps in the healing wounds as well. Mycitracin and pink spray was used until lions recovered successfully without any complications. Various animals were treated in above described manner (Table 1).

All the treated animals were cured successfully without anaesthesia. Depth of wound ranged from 0.1-2.0 cm while number of larvae ranged from 3-20 in number. Figures 1 and 2 showed the maggot wounds in lions.

It is important to ensure the removal of all maggots because wound healing would not be possible if even a single maggot remains in it. If a maggot wound remains unattended for a longer period of time, it can be fatal for the animal. The above-mentioned method is economical for the treatment of a large number of animals at zoos or safari. In this report, maggot wounds healed completely on 10^{th} day of infection while surgical operation healed the wound on 12^{th} day after operation in tigers (Talukder *et al.,* 2017). Rehamn *et al.* (2009) reported maggot wound healing at day 17 after treatment in cattle treated with broad spectrum antibiotics. However, Saqib *et al.* (2015) reported lipid emulsion as an excellent remedy to treat Ivermectin toxicity. An overall improvement in animal health was observed as Yasmeen *et al.* (2018) reported 21 numbers of *Panthera leo* species while 44 was mentioned in the present study this credit goes to animal management team who are trying to provide better opportunities for animal health.

Fig. 1. Maggots losing their grip due to antiseptic

Fig. 2. Removal of maggots with sterilized forceps

Table 1. Cases of maggot wounds observed and treated in African Lions at Safari Zoo Lahore

Sr. No.	Gender	Number of wounds	Position of wound	Nature of wound	Length (cm)	Width (cm)	Depth (cm)	No. of Larvae removed
1		2	Neck, Back	Tract Wound	4.5	6.1	1.2	3
2	Male	1	Right Shoulder	Tract wound	5.2	3.0	1.4	4
3		1	Eye	Tract wound	2.9	1.9	0.8	3
4		1	Base of the tail	Pocket wound	5.2	3.9	1.7	8
5		1	Back	Pocket wound	7.0	4.7	1.3	12
6		3	Neck	Pocket wound	6.1	3.2	1.5	8
7		1	Back	Pocket wound	5.7	2.8	1.0	7
8	Female	1	Thigh	Pocket wound	4.3	3.7	1.9	20
9		1	Neck	Pocket wound	3.9	2.1	1.1	6
10		2	Paw	Pocket wound	4.9	3.7	1.6	5
11		1	Left shoulder	Pocket wound	6.8	4.9	2.1	9
12		1	Base of tail	Tract Wound	5.7	4.2	2.0	7

Conclusion: It was concluded in the study that both tract and pocket wounds can be treated with hydrogen peroxide and pyodine to loosen the grip and later Mycitracin and pink spray remained successful remedies to cure the wounds. The method is economical and beneficial for the wound treatment.

Conflict of Interest: There is no conflict of interest.

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