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Effect of Ivermectin on Wound Myiasis- A Hospital Based Study

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Abstract

Myiasis is infestation of tissues or body cavities of a live mammal by larvae of flies (maggots). It is a debilitating condition seen commonly in our part of the world and if unchecked would devour large amount of flesh undermining the skin creating flask like bone deep wounds. Most of the patients that reported to our emergency department were homeless, drunkards, mentally and physically disabled people. This data was compiled from the admission log book of our surgical emergency and OPD from January 2009 to March 2016. We treated and observed that the patients who received oral and topical ivermectin treatment showed almost complete resolution of myiasis with a very rapid recovery (3-4 days) as compared to the conventional use of turpentine oil at local site with regular debridement and picking up of live larvae from the wound site.

Keywords: Maggots; Ivermectin; Wound myiasis; Turpentine oil

Introduction

Myiasis is the infestation of vertebrate animals by dipterous larva, which feed on host's dead or living tissue, liquid body substances or ingested food [1]. The term was coined by an English entomologist, Frederick William Hope, in 1840 [2]. Although typically a greater problem for animals, myiasis may also frequently affect the humans in tropical regions, especially India, warranting medical and surgical attention [2-6]. Such infestations often present a severe problem for livestock industries worldwide, causing severe economic losses [7,8]

Materials and Methods

We used our admission log book to identify the patients admitted having wound myiasis. A total of 107 patients (88 males and 19 females) were admitted from Jan 2009 to April

2016. Mean age of males was around 47.13 and that of females was 45.2 years.

Previously patients that reported to our emergency were primarily treated with analgesics, broad spectrum antibiotics, tetanus toxoid injection along with manual removal of maggots with local application of turpentine oil at the site of infestation. Maggot removal was done twice a day for several days. In 80 patients oral ivermectin 12 mg (0.2 mg/kg adult dose) single dose was given along with a one-time topical ivermectin application prepared by dissolving 12 mg tablet in 50 ml normal saline after taking valid written consent from the patient or the attendant wherever applicable. The dressing was kept for about 4 hours post oral and topical treatment by ivermectin.

Results

It was observed that the patients that were treated with turpentine oil needed manual removal of maggots for several days but among those 80 patients treated with ivermectin 76 of them had all their maggots dead within 4-5 hours. Dead maggots were manually removed and debridement of the wound was done which resulted in faster recovery and shorter hospital stay. 17 patients which were treated by turpentine oil only, had their maggots removed, but after several days of manual removal (Tables 1 and 2).

Table 1 Age and gender wise distribution of the patients presenting to us with myiasis.

Age (Years)	group	No. of males	No. of females	Total
21-30		10	2	12
31-40		14	3	17
41-50		34	9	43
51-60		18	3	21
61-70		12	2	14

Statistical Analysis

We applied Fischer's Z test on our final data. The z value for the results we obtained is 9.13 with $p < 0.001$ which shows that our finding is significant and ivermectin has definite role in resolution of maggots.

Table 2 Showing duration of stay in the hospital for the different methods of treatment.

Duration of stay	Treatment with ivermectin	% of patients	Treatment with turpentine oil	% of patients
<7 days	39	48.8%	03	11.1%
7-13 days	33	41.2%	07	25.9%
14-20 days	06	7.5%	11	40.8%
>20 days	02	2.5%	06	22.2%

Discussion

Patient of wound myiasis shows presence of ragged, foul smelling lesion containing the maggots [6], patients experienced pain and discomfort as early feature, though in some cases the wounds were painless as the larvae destroys the sensory nerve endings during the process of invasion [4]. Poor hygiene and low socioeconomic status are the most important risk factors for acquiring myiasis [9,10]. Another important factor is an abundance of exposed preexisting suppurative lesions that attract and stimulate the deposit of eggs by the female insect. Wounds with alkaline discharges (pH 7.1 to 7.5) have been reported to be especially attractive to blow flies [11].

We observed that out of 80 patients that were given ivermectin 76 patients had complete resolution of maggots within 4-5 hours. Remaining patients (27) that were treated with turpentine oil had to be repeatedly treated with it and suffered greater tissue loss, pain, a cumbersome daily activity of plucking out the maggots along with a longer hospital stay and among them 17 patients had resolution of maggot infestation.

Conclusion

In our study it was observed that ivermectin treatment is strongly associated with complete resolution of maggot

infestation of wounds. 4 patients among those treated with ivermectin did not show improvement probably due to lack of hygiene, relatively bigger size of wound.

Ivermectin in comparison to turpentine oil is strongly associated with faster recovery, shorter hospital stay, less pain and less time consumption of medical personnel as repeated removal of maggots is not needed.

Conflict of Interest

None reported.

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