

Myiasis Caused by *Musca domestica* Larvae in a Child: A Case Study

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Abstract: The term myiasis is the infestation of tissue by the larvae of flies. This parasitic infestation is well documented in the skin, especially among animals and people in tropical and subtropical zones. Among the sites of infestation, the human mouth is a common site mainly in tropical countries and is associated with inadequate public and personal hygiene. Due to its destructive potential, appropriate treatment is necessary. This study describes oral myiasis in an 8 years old boy who lives relatively warmer area of his country. The myiasis occurred in the anterior upper jaw associated with palatal area of left incisor and lateral tooth. Pathologic soft tissue sockets were observed in the palatal area at the level of the both deciduous incisor and lateral along the deep periodontal tissues.

Key words: Myiasis, parasite infection, oral infestation, tissues, skin, hygiene

INTRODUCTION

Myiasis (from the Latin words muia and iasis mean fly and disease, respectively) is the invasion of living tissue of humans and other mammals (Al-Ismaily and Scully, 1995; Shinohara *et al.*, 2004) by the eggs or larvae of flies of the order of Diptera (Erol *et al.*, 2000; Yazar *et al.*, 2005). Myiasis is a worldwide phenomenon that is related to the latitude and the lifecycle of certain species of flies (Erol *et al.*, 2000; Schneider *et al.*, 2007). It occurs mainly tropical and subtropical area and also this parasitic infection is seen in regions with a warm and humid climate (Frikh *et al.*, 2009; Marty and Whiteside, 2005). The flies responsible for the condition prefer a warm and humid environment, therefore myiasis is restricted to the summer months in temperate zones while it is all year round in the tropics (Hall and Wall, 1995; Junior *et al.*, 2010).

Depending upon the anatomic sites affected it presents clinically as cutaneous myiasis, myiasis of external orifices (oral, nasal, ocular, aural, anal and genital) and myiasis of internal organs (intestinal, urinary) (Dogra and Mahajan, 2010; Gursel *et al.*, 2002). Cutaneous myiasis is perhaps the most commonly reported entity. Species causing skin, subcutaneous and mucosal myiasis include *Gastrophilus intestinalis* (horse botfly), *Hypoderma bovis* (cattle botfly) and *Dermatobia hominis*

(human botfly). *Musca domestica*, the common house fly is a rare cause of myiasis despite its presence in abundance (Dogra and Mahajan, 2010).

In recent decades, physicians have reported that this parasitic infection has been increasingly observed due to increasing travel to exotic destination (Droma *et al.*, 2007; Meinking *et al.*, 2003).

Oral myiasis has been described in the literature since 1909 (Zeltser and Lustmann, 1988) and also this condition were occurred secondary to medical or anatomical in some cases (mouth breathing, 16 cerebral palsy, anterior open bite, incompetent lips, delayed and neglected mandibular fracture) (Abdo *et al.*, 2006). All of these conditions can lead the infestation of human tissues easily. Oral myiasis is usually associated with poor individual hygiene, alcoholism and malnutrition condition (Abdo *et al.*, 2006).

The treatment of oral myiasis is the surgical removal of the maggots (Millikan, 1999). The use of drugs to treat oral myiasis is incipient and few reports are found.

CASE REPORT

An 8 years old boy was brought to the clinic with a clinical history of larvae coming out his mouth (Fig. 1). He was examined by a general practitioner who noticed maggots in the mouth. Ten maggots were removed from



Fig. 1: Maggots



Fig. 4: Oral view after healing



Fig. 2: Intra oral view



Fig. 3: Lip incompetence of the case

the palatal lesion. Then he referred the patient to the clinic. Oral examination showed erythematous and tender palatal swelling just behind the right upper incisor and lateral. Maggots and serous exudate were coming out from the wound present over the swelling (Fig. 2). The child was unable to keep her mouth closed due to lip incompetence (Fig. 3). His parents said that he had mouth breathing during sleep and waking. When touched with a dental probe the larva started to move. Apart from his



Fig. 5: The larvae of the house fly (*Musca domestica*) are creamy-white and cylindrical with broad and flattened posterior end and tapering anteriorly toward the head that contains one pair of dark hooks

oral condition, the patient was in good health. He was not using any medications nor did he suffer from any chronic disease or condition. Radiographic examination revealed no abnormality in the underlying bones or paranasal sinuses. Other laboratory investigations including complete blood counts, serum biochemistry, urinalysis and chest X-rays were normal. The maggots were manually removed completely using clinical forceps. The child was administered ceftriaxone-sulbactam and metronidazole in recommended doses for secondary infection and given fluid/nutritional supplements. The wound was cleansed every 2 h with warm saline and chlorhexidine gluconate till it healed in about 7 days (Fig. 4). The parents were advised for maintaining his dental hygiene and follow up regularly because of the possibility of similar problem occurring again. The larval specimens were sent to the department of parasitology of medicine faculty for identification. The larvae were identified as the early instar (Fig. 5) of *Musca domestica*.

DISCUSSION

According to myiasis localization on the host body there are some subtypes such as nasopharyngeal, dermal, subdermal, urogenital, oral and internal organs. Also there is another classification that based on the type of host-parasite relationship (obligatory, facultative or pseudomyiasis). Larval flies are classified in the obligatory subtype. Their obligatory development of the three stages in live tissues cause the most morbidity (Barbosa *et al.*, 2008; Gomez *et al.*, 2003).

Due to low socio-economic status most of myiasis were observed in developing countries and in the tropics and only rarely in western countries (Droma *et al.*, 2007; Zeltser and Lustmann, 1988).

Oral myiasis has been ascribed in patients having poor orodental hygiene, suppurative lesions, neoplasias, those suffering from alcoholism, senility, periodontal disease and incompetent lips. Open mouth during sleep and waking is a predisposing factor for myiasis (Hakimi and Yazdi, 2002).

There are many options for treating the myiasis but the simplest is the removal of the larvae with forceps (or even general) (Millikan, 1999; Zeltser and Lustmann, 1988). If clinicians are unable to remove the larvae completely, the remaining larvae can cause inflammatory reactions, infections or even granulomas. Larvae can also be removed by debridement. Now a days, successful cases of treatment with ivermectin have been described (Droma *et al.*, 2007; Shinohara *et al.*, 2004).

There is a lot of Dipteran species which can cause an infestation of the oral cavity. These species are *Musca domestica*, *Oestrus ovis* (Oestriidae), Calliphoridae, *Lucilia sericata* (Calliphoridae), *Cochliomyia hominivorax* (Calliphoridae), *Cochliomyia hominivorax*, *Chrysomya bezziana* (Calliphoridae), *Sarcophagi*, *Wohlfahrtia magnifica* (Sarcophagidae).

M. domestica (Family: Muscidae) is the most common of all flies fluttering in homes and indeed one of the most widely distributed insects. It is generally considered a pest that can carry serious diseases. This insect can carry important diseases such as Salmonella, Shigella, Campylobacter, Escherichia, Enterococcus and Chlamydia. Each female fly can lay approximately 500 eggs in several batches. Fruit and vegetable cull piles, partially incinerated garbage and incompletely composted manure are highly favored sites for its breeding.

The larva goes through three instars and become a full-grown maggot, 8-12 mm long and has a greasy, cream-colored appearance. Early instar larvae are 3-9 mm long, creamy-white in color, cylindrical but tapering

toward the head and have 13 segments of which only 12 are apparent because the first two are partly fused. The head contains one pair of dark hooks. The posterior spiracles are slightly raised and the spiracular openings are sinuous slits which are completely surrounded by an oval black border.

CONCLUSION

Prevention of children and elders myiasis is important and involves control of fly population, general cleanliness, basic sanitation and health education with a special emphasis on oral health care in patients with special needs.

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