Exuberant Oral Myiasis Caused by *Musca domestica* (Housefly)

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ABSTRACT

Tissues of oral cavity, when invaded by the parasitic larvae of houseflies, the condition is called as oral myiasis. It is a rare disease that is most common in developing countries and is associated with conditions leading to persistent mouth opening along with poor oral hygiene, suppurative lesions, severe halitosis and maxillofacial trauma. A case of exuberant oral myiasis in a 42-year-old female patient is described here. She reported with swelling, pain, mobility of teeth and foul odor. Diagnosis was based primarily on history and clinical features. Management included use of turpentine oil, mechanical removal of larvae followed by extraction of mobile teeth and curettage along with supportive antibiotic and analgesic therapy. Supportive nutritional supplements and timely institution of treatment encompassing removal of the offending larvae and carious teeth with proper education and motivation of the patient including oral hygiene instructions led to the resolution of these lesions.

Key words: Diptera, Larvae, Maggots, Motivation, Oral hygiene, Oral myiasis

INTRODUCTION

Myiasis ("myi = fly") is an infectious disease caused by invasion of vital and/or necrotic tissues by larvae of houseflies.[1] The term "myiasis" was coined by Hope (1840) and oral myiasis by Laurence (1909).[2] Myiasis involving an oro-dental complex is rare and is associated with conditions leading to persistent mouth opening along with poor oral hygiene, suppurative lesions, severe halitosis and maxillofacial trauma. It has also been reported among epileptic patients with lacerated lips following a seizure, incompetent lips and thumb-sucking habits, advanced periodontal disease, tooth extraction sites, fungating carcinoma of buccal mucosa and in patients with tetanus or Alzheimer's disease.[3-5] A case of exuberant oral myiasis in the anterior region of maxilla of a female adult patient is presented here.

CASE REPORT

A 42-year-old female patient reported with a chief complaint of pain and swelling in upper front teeth since past 3 days. History of present illness revealed discomfort and mobility with upper anterior teeth since 2 months and difficulty in eating since last 20 days.

The patient was a farm laborer with low socioeconomic background residing in rural area. Extra-oral examination revealed retruded chin and proclinated maxillary anteriors (Class II overjet with incompetent lips), few of which appeared to be on the verge of exfoliation. There was a diffuse swelling involving the upper lip with prominence of the vermilion border. The lip also appeared slightly erythematous, though there was no rise in local temperature [Figure 1].

Intra-oral examination revealed poor oral hygiene, fetid odor and severe periodontitis. There was a solitary swelling involving the anterior maxilla extending from mesial surface of maxillary right first premolar to the distal surface of maxillary left canine measuring approximately 6 × 4 centimeters. The upper anterior vestibule was obliterated and demonstrated cleavages and tunnels in labial mucosa and underlying tissues with numerous visible larvae that exhibited wriggling movement. The involved mucosa was swollen,

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erythematous and also bled easily. Maxillary anterior teeth exhibited pathologic migration along with extrusion and severe gingival recession extending to the apical thirds. Maxillary incisors (teeth # 11, 12, 21 and 22) were carious. Necrotic areas and calculus deposition was also associated with these teeth [Figure 2]. Occlusal radiograph of maxilla revealed destruction of the supporting alveolar bone with floating teeth [Figure 3a]. Based on these clinical and radiographic findings, the case was diagnosed as oral myiasis.

Treatment plan was primarily aimed at encouraging the larvae to come out of the involved area. Topical application of turpentine oil was done with autoclaved gauze soaked in it in order to asphyxiate the larvae. Subsequent mechanical removal of maggots with blunt cotton pliers harvested approximately 55-65 maggots. These were preserved in 40% formaldehyde and identified as larvae of *Musca domestica* or housefly [Figure 3b]. Oral drugs including Doxycycline 100 mg BD on first day followed by OD dose for next 5 days, Metronidazole 400 mg TID for 5 days, Ivermectin 3 mg BD for 5 days and Diclofenac sodium 50 mg TID for 3 days along with a supplement of B-Complex (OD) for 15 days were prescribed. The patient was also advised to rinse with 0.2% Chlorhexidine gluconate mouthwash 10 ml BD for 7 days.

Larvae were removed every day manually as described above. On the third day, when the infection was under control, the mobile teeth were extracted and the wound was debrided in order to remove the necrotic tissue. Finally, the involved site was re-examined for remaining larvae or tissue tabs before being sutured. The patient was educated and motivated with regards to personal hygiene measures with special emphasis on oral hygiene instructions. Three week follow-up demonstrated satisfactory and uneventful healing with complete resolution of lesions.

Figure 1: Extra-oral lip swelling, mild erythema and pathologically extruded carious teeth

Figure 2: Intraoral swelling with obliteration of vestibule, tunnels with evident larvae, extruded teeth and necrotic areas

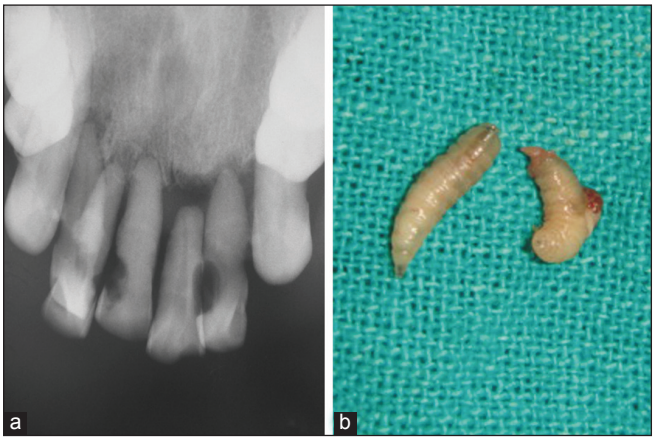

Figure 3: (a) Maxillary occlusal radiograph with destruction of supporting alveolar bone and floating carious teeth. (b) Larvae-creamy white in color

DISCUSSION

Myiasis is an infestation of live human and vertebrate animals with Dipterous larvae that feed on the host's dead and/or living tissues, liquid body substances or ingested food.[1,2,6] It may take many forms including infection of the skin, gut, nasal cavities, eyes[7] and occasionally the oral cavity.[1,2,4,6] Low socioeconomic status, immunocompromised state, debilitated and unhygienic living conditions are the main contributing factors. The risk factors include suppurative lesions, facial trauma, mouth-breathers, extraction wounds and fungating carcinomas.[1,4] Most cases reported in developing countries were due to poor personal hygiene

and housing conditions superadded by a warm climate that aids the breeding of flies.[6] In the present case, the patient was a farm laborer (working in warm climate) with low socioeconomic background and poor oral hygiene residing in a rural area. She was also in debilitated condition and had incompetent lips due to retruded chin and proclinated maxillary anteriors. All these risk factors were responsible for making the patient predisposed to oral myiasis.

Flies causing myiasis belong to the order Diptera. The genera commonly reported are Calliphoridae, Sarcophagidae and Oestridae.[8]

Clinically, myiasis has been classified as primary or secondary. Primary myiasis is caused by biophagous larvae (that feed on living tissues), which are common in cattle (called bicheiras) and are rare in humans. Secondary myiasis is caused by the necrobiophagous flies (that feed on the dead tissues) which is the more common type and victims are patients with necrotic lesions.[9]
There are three forms depending on the condition of the involved tissues:

(a) Accidental myiasis — when larvae are ingested along with food.
(b) Semi-specific/Facultative myiasis — when larvae are laid on necrotic tissues of the wound and
(c) Obligatory myiasis — in which larvae affect undamaged (vital tissues) skin.[3,10]

The present case was diagnosed as a rare case of Primary or Obligatory oral myiasis as the larvae fed on living oral tissues.

In such cases, the adult female lays eggs on live mammals. The sites of infestation are usually superficial wounds, open sores and mucous membranes of any orifice such as mouth.[11] These eggs are hatched within less than a week's time depending on the external temperature. Larval growth causes progressive destruction and cavitations. Larvae obtain their nutrition from the surrounding tissues. Burrowing into deeper soft tissues leads to formation of tunnels. These larvae release toxins to destroy the host tissue.[1,7]

Myiasis is diagnosed clinically based on presence of the parasitic maggots of flies. Mechanical removal of larvae under local anesthesia is the traditional and time-tested treatment for cases infested with myiasis. Local application of several substances such as oil of turpentine, mineral oil, ether, chloroform, ethyl chloride, mercuric chloride, creosote, saline, phenol, calomel, olive oil or iodoform can be used to ensure complete removal of all larvae.[1,2,10]

In the present case, diagnosis of oral myiasis caused by *M. domestica* larvae was based on the clinical appearance of the wriggling larvae as evident in Figure 3b: Whitish cylindrical body tapering towards its head; head exhibiting a pair of dark hooks and raised posterior spiracles surrounded by an oval black border. The presence of cleavages in the maxillary vestibule and fetid odor further aided the diagnosis of oral myiasis.

Doxycycline and Metronidazole were prescribed in the present case to prevent secondary infection. Ivermectin was prescribed in order to block nerve impulses on the nerve ending through the release of gamma amino butyric acid, linking the receptors and causing palsy and death of the larvae. Diclofenac sodium was prescribed to relieve pain. Finally, education and motivation for general and oral hygiene measures were reinforced.

CONCLUSION

The well-known phrase, 'Prevention is better than cure' would be apt in the case of oral myiasis. Prevention of human myiasis involves education and motivation including measures for control of fly populations and adaptation to general measures of cleanliness. These parasitic infestations can be reduced by raising the quality of life, providing good sanitation facilities and improving personal cleanliness measures as they rarely occur in healthy individuals.

REFERENCES

1. Antunes AA, Santos Tde S, Avelar RL, Martins Neto EC, Macedo Neres B, Laureano Filho JR. Oral and maxillofacial myiasis: A case series and literature review. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2011;112:e81-5.
2. Pereira T, Tamgadge AP, Chande MS, Bhalerao S, Tamgadge S. Oral myiasis. Contemp Clin Dent 2010;1:275-6.
3. Mosheref M, Ansari G, Lotfi A. Oral gingival myiasis - A case report. Int J Trop Med 2008;3:97-100.
4. Kumar P, Srikumar GP. Oral myiasis in a maxillofacial trauma patient. Contemp Clin Dent 2012;3:202-4.
5. Freitas DA, Moreira G, Jones KM, Caldeira AP. Social exclusion and myiasis of the upper lip in a Brazilian rural resident. Rural Remote Health 2012;12:2188.
6. Abdo EN, Sette-Dias AC, Comunian CR, Dutra CE, Aguiar EG. Oral myiasis: A case report. Med Oral Patol Oral Cir Bucal 2006;11:E130-1.
7. Baliga MJ, Davis P, Rai P, Rajasekhar V. Orbital myiasis: A case report. Int J Oral Maxillofac Surg 2001;30:83-4.
8. Srivastava R, Devi P, Thimmarasa VB, Jayadev S. Flies blown disease--oral myiasis. Indian J Dent Res 2011;22:615.
9. Shinohara EH, Martini MZ, de Oliveira Neto HG, Takahashi A. Oral myiasis treated with ivermectin: Case report. Braz Dent J 2004;15:79-81.

10. Sowani A, Joglekar D, Kulkarni P. Maggots: A neglected problem in palliative care. Indian J Palliat Care 2004;10:27-9.
11. Rohela M, Jamaiah I, Amir L, Nissapatorn V. A case of auricular myiasis in Malaysia. Southeast Asian J Trop Med Public Health 2006;37(Suppl 3): 91-4.

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