

Case Report

Oral Myiasis: An Unusual Case Report

Abstract

Oral myiasis is a rare disease commonly reported in specially abled patients with poor oral hygiene. It is caused by larvae of certain dipteran flies. It is mostly reported in developing countries and in the tropics. Here we present a case report of oral myiasis in a mentally challenged elderly lady.

Keywords: *Dipteran flies, maggots, myiasis, oral myiasis*

Introduction

The term “myiasis” is derived from the Latin word “myia” meaning fly and “iasis” meaning disease. It is the infestation of tissues of living vertebrate, animals, and humans by larvae of dipteran fly, which feed on host’s dead or living tissues, body fluids, or ingested food.^[1-4] Oral myiasis was first coined by FW Hope in 1840 and was first described by Laurence in 1909.^[4,5] It is rarely encountered as compared to cutaneous myiasis.^[6] Oral myiasis may be secondary to any medical disease, and secondary infestations may occur in cancrum oris, oral extraction wounds, jaw bone wounds, oral leprosy lesion, filariasis, and carcinoma.^[4] Although myiasis is a worldwide phenomenon, the prevalence of which is related to latitude and the lifecycle of various species of flies, oral myiasis is mostly reported in developing countries and the tropics.^[1,5] Oral myiasis may occur when flies are attracted to the bad mouth odor due to poor oral hygiene. Prolonged mouth opening facilitates the deposition of the eggs by the adult fly.^[3] The predisposing factors include low socioeconomic status, immunocompromised state, debilitated, and unhygienic living conditions. Suppurative lesions, facial trauma, mouth-breathing, extraction wounds, fungating carcinomas, and other conditions are considered to be the risk factors.^[4]

Myiasis may be primary and secondary. Primary myiasis is caused by biophagous larvae (feed on living tissue), which are common in cattle (called bicheiras) and

are rare in humans. Nevertheless, when this occurs, it is generally serious and produced by *Cochliomyia hominivorax* larvae (“varejeira” fly) that lay 20–400 eggs on exposed wounds. Hatching of the larvae occurs in 24 h. The larvae are voracious and destroy integral tissues and may cause serious hemorrhage and be life-threatening. Secondary myiasis is that caused by the necrobiophagous flies (feed on dead tissue). This is a more common type and attacks patients with necrotic cavity lesions.^[7]

Myiasis is clinically classified as follows:^[8]

- Dermal and Subdermal myiasis
- Facial cavity myiasis
- Wound or traumatic myiasis
- Gastrointestinal myiasis
- Vaginal myiasis
- Generalized myiasis.

Myiasis can also be classified as follows:^[9]

- Obligatory: When larvae develop in living tissue
- Facultative: When maggots feed on necrotic tissue
- Accidental: When larvae ingested along with food.

The most common anatomic sites for myiasis are the nose, eye, lung, ear, anus, vagina and more rarely, the mouth.^[9] We present a case of oral myiasis in the maxillary anterior region in a mentally challenged elderly patient.

Case Report

A 70 yearold mentally challenged woman accompanied by her son presented to our hospital with a swelling of the upper lip [Figure 1]. The patient had a history of chronic periodontitis. The patient had

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swelling, continuous dull pain, and itching for 4–5 days in relation to upper anterior teeth. Her son reported to have noticed worms in the mouth. The patient was of a low socioeconomic status. Extraoral examination revealed no active infection. The upper lip was swollen and edematous. The right side of the face was also slightly swollen up to the level of lower eyelid. Lymph nodes were not palpable.

On intraoral examination, a necrotic area could be seen in the maxillary anterior region involving the vestibular sulcus and extending from the right canine to the left canine, measuring 4 cm × 2 cm. Maggots were seen in the necrotic area [Figure 2]. The surrounding mucosa was inflamed and tender on palpation with pus discharge. The patient had poor oral hygiene. The tooth 21 was decayed, and the anterior teeth were mobile. There was generalized attrition and abrasion of teeth. Based on the clinical findings, the case was diagnosed as oral myiasis. Biopsy was done, and tissue was sent for histopathological examination to rule out the possibility of any associated lesion, including preexisting malignancy.

A single soft-tissue specimen of size 8 mm × 24 mm × 2 mm was received, which was brownish-black in color, irregular in shape, and soft-tissue examination. Microscopic examination revealed stratified squamous epithelium overlying connective tissue stroma with proliferation of rete ridges. Juxtaepithelial connective tissue stroma showed epithelioid cells, dense inflammatory infiltrate comprising mainly of lymphocytes, eosinophils and plasma cells, dense collagen fibers with endothelial lined blood vessels and giant cells. Deeper section showed adipocytes and muscle fibers cut in longitudinal section [Figure 3].

The patient was treated under local anesthesia, the wound was flushed with turpentine oil, and maggots were manually removed with a tweezer [Figure 4]. The area was irrigated with normal saline and povidone-iodine. After 3 days, there were no larvae in the patient's mouth, and she was discharged. The patient was prescribed antibiotics amoxicillin with clavulanic acid, and the procedure was repeated for 3 consecutive days. The prognosis in these cases is excellent with timely and appropriate management. In our case, the patient could not be evaluated further as she was lost to follow-up.

Discussion

Oral myiasis is a rare pathology.^[7] Apart from the above-mentioned predisposing factors, it has also been reported in patients with advanced periodontal disease, at tooth extraction sites and fungating carcinoma of buccal mucosa, following nosocomial infection, in alcoholics, drug addicts, psychiatric patients, and patients with special needs.^[1,3,4] In our case, mental disability, low socioeconomic status, lack of personal hygiene, poor oral hygiene, and habit of mouth breathing are the most probable causes in the development of oral myiasis.



Figure 1: Swelling of the upper lip



Figure 2: Necrotic area with maggots

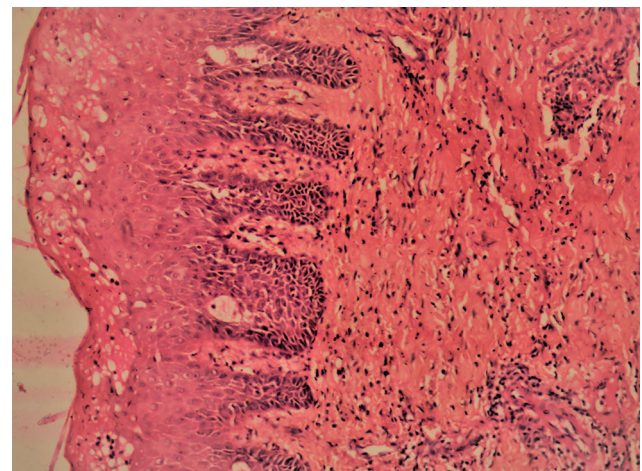


Figure 3: Histopathological image showing necrosis of epithelium, intracellular edema, and inflammatory cells in the underlying connective tissue (H and E, ×200)

It is usually the special people with mental or physical disabilities who are affected with oral myiasis because of the difficulties in maintaining good oral hygiene due to poor manual dexterity and negligence of parents/guardians.^[4]

Low socioeconomic status indicating that a poor living conditions are also a frequent observation in a number of



Figure 4: Manual removal of maggots with a tweezer

cases reported in the literature.^[1,4,9-11] Myiasis is commonly reported in rural areas and villages where people live close to livestock and hot middays of summer are the favourable time of the year for larvipositioning.^[8]

Prolonged mouth opening, poor oral hygiene, and halitosis are frequently reported as favoring factors for oral myiasis in a number of cases.^[1,4,8,9,11] Halitosis attracts the flies, and mouth breathing may favor the fly to come to the patient's oral cavity as a suitable place for larvipositioning.^[1,8] The larvae, which were placed in and around the mouth, may penetrate into the gingival sulcus and position their heads down so the posterior spiracles could become exposed to the open air to make respiration possible.^[8] Oral myiasis is reported in patients with mouth breathing due to incompetent lips associated with class II malocclusion and anterior open bite, patients with neurological deficit, and in toddlers.^[1,4,8,9,11]

The flies causing myiasis belong to the order *Diptera*. Three dipteran families are considered as the main causes of myiasis in the livestock and also occasionally in human. These families include *Oestroidea*, *Calliphoridae* (blowflies), and *Sarcophagidae* (flesh flies). Other important species mainly cause human myiasis are *Dermatobia hominis* (human botfly) and *Cordylobia anthropophaga* (tumbu fly).^[8] *Chrysomya bezziana*, an obligatory myiasis producer, belongs to the genera *Calliphoridae*, whose larvae develop only in living tissue. The species was first found in animal wounds in Hong Kong in the year 2000. The first case in human was documented in 2003 in Hong Kong.^[10] *C. bezziana* is commonly seen in South Asian countries such as Hong Kong, Thailand, Philippines, Malaysia, and Indonesia. It is also found in tropical Africa, the Indian subcontinent, and Papua New Guinea.^[1,11]

The adult female lays 150–200 eggs at a time on superficial wounds, open sores, and mucous membranes in body orifices such as the mouth, ear, and nose.^[1] The eggs hatch within 24 h and the resulting larvae feed on living tissue for 5–7 days. After that, they wiggle out of the wound and

fall to the ground to pupate. The pupa mature sexually in about 1 week–2 months, and the life cycle is completed in 2–3 months.^[11]

C. bezziana differ from other maggot infestations by its ability to cause tissue invasion even without preexisting necrosis.^[11] The larvae burrow into the host's tissues head-downward into the wound in a characteristic screw-like fashion, feeding on living tissue.^[1] The larvae have backward directed segmental hooks with which they anchor themselves to the surrounding tissue. They are photophobic and tend to hide deep into the tissues for a suitable niche to develop into pupa. The presence of these hooks makes manual removal of larvae from the host difficult.^[11] The larvae release toxins to destroy the host tissue. Proteolytic enzymes released by the surrounding bacteria decompose the tissue on which the larvae feed.^[1,3]

The foreign body reaction which results from the penetration of larva in a live tissue had a general nonspecific appearance and must be differentiated from lesions such as inflammatory gingivostomatitis, papillary inflammation, inflammatory exophytic lesions (e.g., pyogenic granuloma), periodontal abscess, and oral manifestations of some malignancies (e.g., leukemia).^[8]

The treatment consists of manual removal of maggots by use of agents such as turpentine oil, mineral oil, or topical irritants such as ether, chloroform, olive oil, calomel, iodoform, and phenol mixture.^[1,3,11] Broad-spectrum antibiotics should be administered. Oral therapy with ivermectin, which is a semi-synthetic macrolide antibiotic isolated from streptomyces avermitilis is also found to be efficacious.^[9,11]

Conclusion

Maggots may cause permanent tissue damage and may even cause death in case of extremely infested wounds and in the absence of proper treatment. Infestation of the oral cavity by maggots is rare, and it is encountered particularly in people of low mental alertness and/or with disability. The oral health of these patients should regularly be examined by a dentist, apart from maintaining general cleanliness and basic sanitation.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given her consent for her images and other clinical information to be reported in the journal. The patient understands that name and initials will not be published and due efforts will be made to conceal identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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