

Oral Myiasis of Maxilla (Palatal Gingiva)

Abstract

Myiasis is an invasion of tissues and organs of humans or animals by fly larvae. Oral myiasis is a rare pathology associated with a medical condition, poor oral hygiene, mouth breathing, and incompetent lip. We present a case of oral myiasis of the maxillary anterior region of the palate, in a 12-year-old male with cerebral palsy and poor oral hygiene. The diagnosis was made on the presence of larvae. The mechanical removal of larvae with hemostat was carried out with ivermectin oral therapy.

Keywords: *Diptera larvae, ivermectin, oral myiasis, parasitic infection*

Introduction

The term myiasis was first coined by “Reverend Frederick William Hope” in 1840 and it originates from a Greek word “myia” meaning fly. Oral myiasis was first described in the literature by “Laurence” in 1909. It was defined by “Zumpt” as the infestation of live human and vertebrate animals with dipterous larvae, which feed at least for a certain period, on the host’s dead or living tissue, liquid body substances, or ingested food.^[1]

Myiasis is an infestation in the humans or animal tissue caused by the fly larvae that evolves into a parasite.^[2] Almost 86 different species of flies belonging to the order, “Diptera” has been reported to cause myiasis in humans.^[3] Primary myiasis is more commonly seen in cattle and livestock affecting living tissue (caused by biophagous larvae also called obligatory myiasis). Secondary myiasis is caused by flies that feed on dead tissue (caused by necro biophagous larvae also called facultative myiasis). This is more commonly seen in humans with necrotic tissue.^[1]

In humans, myiasis is reported in individuals with poor personal hygiene, immunocompromised, and of lower socioeconomic status. The most common anatomical sites involved in myiasis are nose, eyes, lungs, ears, anus, vagina, and,

more rarely, the mouth.^[4] The incidence of oral myiasis is less, as compared to cutaneous myiasis since the oral tissues are not permanently exposed to the external environment.^[3]

Case Report

A 12-year-old male patient with cerebral palsy was referred to the department of dental surgery with the complaints of swelling and pain in the upper front teeth region for the past 4 days. Informed consent was obtained from his parents. The patient was from a low socioeconomic background and taken care of by his parents. Intraoral examination revealed ulceration on the anterior palatal gingiva of the hard palate extending from 15 to 16 with bleeding. Closer observation revealed the crawling of maggots on the palatal aspect. There was a separation of mucoperiosteum of palatal mucosa with burrows and tunnels. He had persistent mouth opening and poor oral hygiene. Routine blood investigation was within the normal limits. Based on the presence of maggots and medical history, the provisional diagnosis of oral myiasis was performed [Figure 1].

Cotton impregnated with turpentine oil was placed at the orifice for approximately 10 min. The larvae were removed mechanically with tissue holding forceps under local anesthesia. Later, 45–50 maggots were removed and taken for entomological study [Figures 2 and 3]. The same procedure was continued for the next 2 days. Antibiotic therapy was started with cefazolin intravenous (IV) every 6 h,

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Submitted : 16-Jan-2020
Revised : 17-Apr-2020
Accepted : 23-May-2020
Published : 07-Aug-2020

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Access this article online

Website:
www.contempclindent.org

DOI: 10.4103/ccd.ccd_49_20

Quick Response Code:



How to cite this article: Vasanthakumar V, Varalakshmi PR, Vanmathi R. Oral myiasis of maxilla (palatal gingiva). *Contemp Clin Dent* 2020;11:162-4.

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Figure 1: Ulceration on the palatal gingiva of the hard palate



Figure 2: Turpentine soaked cotton was placed for removal of larvae



Figure 3: Multiple larvae were removed from the palate

IV metronidazole 500 mg TDS (3 times a day), and 6 mg ivermectin was given orally and repeated for 3 days. After 3 days of hospitalization, the patient was discharged when there were no larvae. The wound healing was complete in 1-month follow-up.

Discussion

Human myiasis is a rare pathology that can occur in any part of the globe but is more common in regions with a warm and humid climate, especially in tropics and subtropics. The parasitic infestation is common in rural areas infecting livestock and pets.^[3]

The life cycle of the fly starts with an egg followed by the larval stage, pupa, and finally, the adult fly.^[5] The egg hatches in 12–18 h. During the first and second stage, the larva has segmental hoods which are directed backward. The hook helps the larva to anchor themselves to the surrounding tissue. The presence of these hooks makes the removal of the larva from its host difficult. The larvae reach the prepupal stage (third instar stage) in 8–12 days. They wriggle and fall to the ground to pupate. The larval stage lasts for about 6–8 days, during which they are parasitic to humans. The pupa stage is temperature dependent with growth favored by warm weather.^[5,6] The adult fly emerges in the next 1 week–2 months, depending on the temperature. The burrowing of larvae causes separation of the mucoperiosteum from the bone. The opening of the burrow with induration of the marginal tissues forms a dome-shaped “warble.”^[7] The posterior spiracles are exposed to open air for respiration such that their head is positioned downward.^[6] They are photophobic. They tend to hide deep into the tissue with a suitable niche for development into a pupa.^[3] The diagnosis was made clinically with larval movement. In the present case, the location of the lesion is in the anterior palatal gingival of the maxilla, implying direct inoculation of the tissue. The necrotic ulcer and separation of mucoperiosteum are suggestive of the burrowing activity of larvae. Due to the presence of intact palatal bone clinically from 15 to 25 (no proximity to maxillary sinus) and lack of patient cooperation (cerebral palsy), a radiograph was not suggested in this case.

Medical conditions such as diabetes mellitus, peripheral vascular disease, mentally challenged/neurological deficits, leprosy, cerebral palsy, hemiplegia, psychiatric disorder, and senility with open wounds serve as a predisposing factor. Other risk factors include the oral condition with poor oral hygiene, anterior open bite, incompetent lip, mouth breathing, after trauma (neglected fracture and laceration), tooth extraction, and suppurative lesions.^[6-8] The prevailing poor hygiene with a lack of manual dexterity and persistent mouth opening in the present case may have provided suitable substrate and temperature for the larvae.

The suffocation technique or occlusion with turpentine oil is most used for irritating the parasite and forcing them out of the lesion. Mechanical removal of larvae with the topical asphyxiating agent and surgical exploration of both necrotic tissue and bone are considered appropriate.^[6] Ivermectin is a semi-synthetic macrolide antibiotic derived from *Streptomyces avermitilis*.^[2] It blocks impulses on the nerve

ending of larvae through the release of gamma-aminobutyric acid. This leads to parasitic death and spontaneous elimination. Acetylcholine, being the main neurotransmitter in human, is not affected by Ivermectin; therefore, a safety margin could be maintained at the recommended dose. It is a safe medication. It presents neither side effects nor toxicity.^[9] It is given orally at a dose of 200–400 mcg/kg body weight.^[10] However, in the present case, manual removal of larvae using hemostats after using turpentine oil and oral therapy with ivermectin has been carried out.

Conclusion

Oral myiasis can be prevented if proper sanitary, personal, and oral hygiene measures are followed. Further, the condition could be controlled by preventive measures on a consistent basis to the predisposed population, such as the medically, physically, and mentally compromised patients, along with medical intervention in a timely fashion. Educating parents/guardians to make them aware of the condition is essential.

Declaration of patient consent

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

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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