

Oral Myiasis treated with Ivermectin: A Case Series

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ABSTRACT

Myiasis is the infestation of live human and animals by dipteran larvae. Oral myiasis is a rare pathology and a risk to the patient's life. Conventional treatment is mechanical removal of the larvae (maggots) one by one, which is painful, distressing, and embarrassing both to the patient and to the dentist. We present cases series of patients who reported with diffuse swelling in the oro facial region which was diagnosed as myiasis and treated successfully with ivermectin. The use of this antibiotic in humans, its mechanism of action and indications are discussed.

KEYWORDS: Oral Myiasis, Ivermectin, Parasitosis.

INTRODUCTION

Myiasis, from the Latin words muia and iasis mean fly and disease respectively, as described by Zumpt is "the infestation of live human and vertebrate animals with dipterous larvae, which, at least for a certain period, feed on the host's dead or living tissues, liquid body substances, or ingested food.¹ Myiasis is a pathology caused by the presence of fly larvae in human or animal tissues that evolve to a parasite.² There is a higher incidence in rural zones, infecting domestic animals such as cattle and pigs, as well as house pets such as dogs and cats, leading to economic loss and health injuries of these animals. They can attack humans, generally elderly people who are ill or debilitated^{3,4}, especially in the tropics and third world countries.^{5,6} Clinically, it can be classified as 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 caused by *Cochliomya hominivorax* larvae ("varejeira" fly) that lays 20 to 400 eggs on exposed wounds. Hatching of the larvae occurs in 24 hours. 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.^{2,4} Clinical manifestations of myiasis are not specific and vary according to the involved area of the body. General signs and symptoms including fever, myalgia, arthralgia, hypereosinophilia, elevated ESR (erythrocyte sedimentation rate) and inflammatory reaction at the site of infection such as pseudo-furuncles in dermal myiasis may be present.⁷ First-stage larva is generally seen in human myiasis; however, reports indicate that the larva

may remain up to the third stage of growth.^{8,9} We present case series of 5 patients with oral myiasis treated successfully with oral ivermectin.

CASE REPORT

Case Report 1: A 34 year old female patient reported with the complain of tingling sensation in the region of upper lip since past 2 days and mobile worms in her mouth since past 24 hours. On extraoral clinical examination, the patient was found to be dehydrated, presenting an anterior swelling on the upper lip covered with integral skin and with signs of inflammation (Figure 1A). Intra-oral examination revealed large number of mobile larvae in the maxillary gingival labial sulcus with generalized severe periodontitis (Figure 1B). Hematological analysis was normal. After consultation with physician antibiotic therapy was started (1 g cefalotin, *iv*, every 6 h), endovenous rehydration, and 6 mg ivermectin was given orally, and repeated after 24 h.



Figure 1: (A) Extra oral picture. Note the swelling of the upper lip. (B) Intra oral picture. Multiple larvae seen in the upper labial sulcus

On the first day, a marked decrease of the larvae (about 80%) was observed, and the remaining larvae were immobile. Oral cleansing was made daily. After 3 days of hospitalization, there were no larvae in the patient's

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mouth and she was discharged. A parasitologist later identified the larva as the fly, *Cochliomyia hominivorax*.

Case Report -2: A 46-year old male patient reported with the chief complain of painful swelling over the upper lip, foul smell and creeping sensation inside the mouth since 4 days. Patient gave history of trauma due to fall on the road 10 days before. The patient was a neglected person at home and was mentally unstable. On extra oral examination diffuse indurated swelling was observed over the upper lip. Intra oral examination revealed necrotizing ulcerative lesion in anterior region of hard palate with concomitant pus discharge (Figure 2A). A careful examination revealed presence of larvae along with pus (Figure 2B). As a chair side procedure, topical anesthetic was applied and the worms were removed gently by mean of pliers. The specimen consisting of larvae were sent to the department of parasitology for further investigation. After complete hematological examination & consultation with the physician same drug regimen as mentioned in the first case was given to the patient. Patient responded well & was discharged in 2 days.



Figure 2: (A) Intra oral picture. Note the ulceration on the anterior palate. (B) Picture of the larvae after removal

Case Report -3: A 62-year old male patient reported with the complaint of with painful swelling over the upper lip and ulcer of the anterior region of palate. Extra oral examination showed diffuse tender swelling over the upper lip necrotizing ulcerative lesion in the anterior region of the hard palate with mobile anterior teeth. A careful examination revealed presence of number of larvae infesting onto the mucosa (Figure 3). Larvae were removed manually with the help of pliers. The patient was put on the same drug regimen and as that of the first case. Patient responded well to the treatment and was discharged in 2 days.

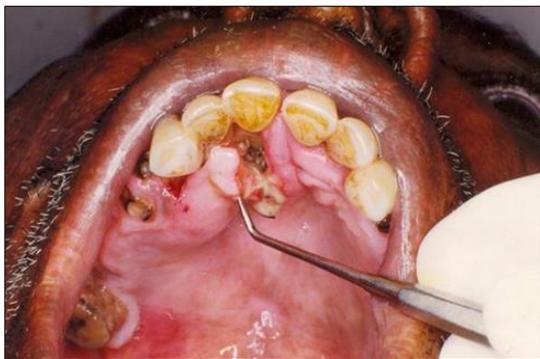


Figure 3: Mobile larvae observed on the palatal aspect of gingiva, with concomitant ulceration

Case Report-4: An 80 year old female patient was accompanied with her relatives to the department of oral medicine and radiology with the complaint of mobile worms in her mouth since 3 days. Patient was the bomb blast survivor in past, mentally unstable, and neglected person in house with poor personal and oral hygiene maintenance. Extra oral examination revealed, patient had disfigured face, stretched skin, difficulty in closing mouth owing to facial burns in past. Swelling of the lower lip was evident. Intraoral examination revealed deep ulceration and surrounding necrosis in the lower labial sulcus, careful examination revealed multiple mobile larvae on the floor of the ulcer in the region lower labial sulcus (Figure 4). After complete haematological examination and physicians consent, same drug regimen was started with the patient as that of the first case. Patient responded well with the treatment and significant reduction in the number of the mobile larvae in the ulcer was seen on the first day. Treatment was continued for 3 days and when patient's oral cavity was free of larvae, she was discharged. Regular scaling was done for the patient. Topical oral anesthetic gel was prescribed to the patient till the ulcer heals. Ulcer healed in 12 days, mobile teeth were extracted and patient was kept on regular follow up for oral prophylaxis.



Figure 4: Mobile larvae observed in the lower labial sulcus with concomitant ulceration

Case Report- 5: A 56 year old patient reported with the complaint of swelling on the hard palate with accompanied foul smell in oral cavity since 15 days. Patient also gave the history of mobile worms coming out of the swelling intermittently. On introral examination, soft fluctuant swelling was seen in the anterior region of the hard palate with necrotic overlying mucosa (Figure 5). Turpentine oil (2ml) was injected into the swelling causing it to ulcerate. Small larva moving out of the swelling were identified following injection of turpentine oil, which were picked up by plain forcep and send for examination. Overlying mucosa was incised and cavity was explored for remaining larvae and manual removal of larvae was done, cavity was then flushed with betadine.

After complete hematological examination & consultation with the physician same drug regimen was

followed as that of the first case. Patient was discharged in 2 days. Patient was kept on regular follow and normal healing of ulcer was seen.



Figure 5: Note the palatal swelling with superficial necrosis of mucosa

DISCUSSION

The diagnosis of myiasis is clinically made on the basis of larval movement. Although in some cases where larvae are in deep tissues differential diagnosis is necessary. The standard treatment for myiasis is the manual removal, associated or not with topical and systemic asphyxiating drugs that force the larvae to come out. Various substances (ether, chloroform, olive oil, calomel, iodoform, phenol mixture) have been recommended for the treatment of myiasis; however, they have controversial results.⁷⁻⁹ Ivermectin is a semi-synthetic macrolide antibiotic, isolated from *Streptomyces avermitilis*, and its use is well documented in large animals for the control of gastrointestinal and pulmonary parasitosis, for infestation by crab-louse and larva flies ("berne"). In 1993, ivermectin was reported to be safe for human use¹⁰ and has been indicated for the treatment of filaria, scabies and strongyloidosis in humans.^{10,11} Evaluating the use of oral ivermectin in human cavity infestations, Ribeiro et al.⁴ reported that no patient presented alterations in hepatic or renal function after the oral ingestion of ivermectin. Thus, they concluded that it is a safe medication and presents neither side effects nor toxicity. It is assumed that ivermectin blocks nerve impulses on the ending nerve through the release of gamma aminobutyric acid (GABA), linking to the receptors and causing palsy and death.¹² Acetylcholine, which is the main peripheral neurotransmitter in mammals, is not affected by ivermectin, maintaining a security margin when it is used at the recommended dose.⁴ Recently, indications for topical and oral use for the treatment of myiasis have been found in the literature.¹³⁻¹⁵ Duque et al.¹⁶ treated oral myiasis with *subcutaneous* ivermectin, although 2 of the 3 cases were associated with phenol mixture (10% creolin) as a local measure for the control of larvae.

CONCLUSION

The current literature describes ivermectin as an efficient and safe method of treatment of parasitosis and the present report describes its use in human oral myiasis.

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