

ORAL MYIASIS: A CASE SERIES OF 11 PATIENTS TREATED AT KHYBER COLLEGE OF DENTISTRY HOSPITAL, PESHAWAR

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ABSTRACT

In order to determine the clinical presentation and management of 11 patients suffering from Oral myiasis a descriptive case series study was carried out at Khyber College of Dentistry, Peshawar, from June 2008 to December 2011. 11 patients of Oral Myiasis reported over a time period of 5 years. Thorough history was taken from each patient followed by complete clinical examination, relevant radiographs were advised where necessary. Surgical debridement was carried out followed by larvae removal with the help of maggot oil. Two patients were advised systemic therapy with Ivermectin. Mean age of the patient at the time of presentation was 39.72 years SD + 21.5. Majority of patients were males (64%). Anterior maxilla was found to be the predominant site. Head and neck malignancies were found to be the most common cause of Myiasis. Thus Oral myiasis is a rare but serious condition, involving necrotic and suppurative wounds in patients with deranged systemic conditions. Treatment includes cleaning, debridement, removal of larvae and systemic therapy with Ivermectin.

Key Words: Oral Myiasis, Malignancies, Larvae, Ivermectin.

INTRODUCTION

The infestation of live body cavities with insects and flies has been known to mankind since past. Myiasis is a Greek word derived from two separate words, "Mya" meaning fly and "iasis" meaning disease, thus literally meaning disease produced by flies. William Hope in 1840 first used this term to describe infestation caused by Dipterous larvae and thus distinguished such diseases from diseases caused by insects in general.¹ Such infestations produced by flies have been well known in livestock and animals since ancient times however, it was Lawrence who first described this condition in humans in 1909.²

Diptera is a class of insects, commonly known as "true flies." The distinguishing features of true flies from other insects are single pair of functional wings with reduced hind wings. Fly act as carriers and thrive

in warm and humid climates.³ Thus Myiasis is found in abundance in areas where climate is warm for most part of the year. Stages involved in life cycle of the fly include egg stage, larvae, pupae and then adult fly. Larval stage lasts for 6-8 days and during this stage they are parasitic to human beings. These larvae are attached to tissues with help of special hooks. Furthermore, they are found deeper in tissues because they are photophobic and prefer dark environment.⁴ They continue to erode in surrounding tissue and release proteolytic enzymes that lead to tissue necrosis and destruction.⁵

Myiasis can be classified in a number of ways. Depending on the condition of tissues in which infestation is present, myiasis can be accidental where larvae get ingested along with food. Besides that it can be semi specific in which larvae are deposited on necrotic tissues and obligatory when undamaged body area is affected. According to anatomic site in which disease occur Myiasis can be cutaneous, myiasis of internal organs and myiasis of external orifices. Based on clinical course of disease, it has two forms primary and secondary.⁶

The incidence of oral myiasis is less in literature as compared to cutaneous myiasis. Reason for this may

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be that oral cavity is not easily accessible to fly for oviposition to occur. Thus one strong factor that increases risk factor for myiasis in oral cavity is incompetent oral seal. Other factors can be divided into general and local factors. Unhygienic and unsanitary living conditions especially areas in which livestock are found in abundance predispose towards this condition. General systemic diseases such as immune compromised states, diabetes mellitus, senilities, cerebral palsies, chronic wasting diseases and malignancies are other factors that increase risk of myiasis.⁷ Local factors responsible for this condition include necrotic wounds, extraction sockets, poor oral hygiene, facial trauma, and squamous cell carcinomas.⁸

The aim of the present paper is to present clinical presentation of 11 cases of oral myiasis, treated at oral and maxillofacial surgery unit of Khyber College of Dentistry, Peshawar.

METHODOLOGY

The present study was carried out on 11 patients suffering from oral myiasis reporting to Oral and Maxillofacial Surgery Department of Khyber College of Dentistry, Peshawar over a time period of 5 years that is from June 2008 to December 2013. A detailed history was taken from each patient followed by detailed clinical examination. Radiographs such as orthopantomogram (OPG) and paranasal sinus view (PNS) were advised where necessary. Systemic condition of each patient was evaluated and abnormalities were noted. All the data were entered in structured questionnaire. Diagnosis of oral myiasis was made clinically by presence of dipterous larvae in oral cavity.

All the patients were treated symptomatically along with management of systemic condition which was carried out in liaison with medical specialists. All the patients were treated under local anesthesia. Necrotic wounds were cleaned by thorough irrigation with normal saline. Debridement was carried out in infected wounds and necrotic slough was removed. For the mechanical detachment of larvae, maggot oil was used which was applied with help of gauze following which larvae were removed mechanically with help of toothed tissue forceps. Oral hygiene instructions were given. Systemic therapy with Ivermectin was also advised to two patients. None of the patient reported back after initial debridement and cleaning of the involved site.

RESULTS

This study was carried out on a total of 11 patients. Mean age of the patient was 39.72 SD + 21.5. Male patients were 64% while females were 36%. Out of eleven patients 45% presented with head and neck malignancies, while 18% were fire arm injury patients, altered mental status such as cerebral palsy and hepatic encephalopathy was seen in 27% patients. One patient reported with oral myiasis in an infected dental socket. The rest of the details are given in Table 1.

DISCUSSION

Oral myiasis is a serious and debilitating condition. It is a disease mainly of people living in under privileged and deprived conditions. Myiasis in oral cavity is reported less in literature and only isolated case reports are found. Myiasis is found more in areas with warm and humid climate such as tropical rural

TABLE 1: CLINICAL PRESENTATION OF PATIENTS SUFFERING FROM ORAL MYIASIS

S. No.	Age in years	Gender	Site	Predisposing factors
1	38	Male	Palate	Adenoid cystic carcinoma
2	26	Male	Anterior Floor of the mouth	Fire arm injury
3	25	Female	Anterior mandible	Adenoid cystic carcinoma
4	21	Male	Anterior floor of the mouth	Cerebral palsy
5	28	Male	Anterior mandible	Fire arm injury (pec major reconstruction)
6	60	Male	Posterior hard palate	Squamous cell carcinoma (pec major reconstruction)
7	75	Female	Right maxilla	Extraction wound
8	55	Female	Anterior Floor of the mouth	Squamous cell carcinoma
9	27	Male	Upper lip	Hepatic encephalopathy HCV positive
10	70	Female	Right parotid region	Perforated non healing ulcer
11	12	Male	Anterior maxilla	Mentally handicapped

areas where fly and livestock are found in abundance.⁹ Some of these areas include South-East Asia, China, Indian subcontinent, tropical Africa, and Papua New Guinea.¹⁰

In the present study, 11 patients reported with oral myiasis over a time period of 5 years. It was found that 7 out of 11 patients were male. Antonio et al in a series of 10 patients with oral myiasis found that 7 out of 10 affected patients were male.¹¹ Similarly Droma et al also reported that myiasis occurs in a higher incidence among male as compared to females.¹²

The mean age of patients in current study was 39.72 SD + 21.5. Oral myiasis has been reported to occur in both young and old age groups. 5 out of 11 patients in current study were below 30 years of age. However, in each of these patients pre disposing factor was present. This is in accordance with other studies, thus this infestation in healthy young adult has not been documented in literature yet. Patients involved with this condition are mostly senile, debilitated, mentally handicapped, alcoholics and cerebrally palsied.¹³

In the above case series, 5 cases occurred in mandible while 6 were found in maxilla. Thus maxilla was found to be the predominant site for myiasis. In the case series by Antonio et al mandible was found to be the predominant site. However in literature isolated case reports have described myiasis to be more frequent in upper anterior maxilla especially palate.^{14,15} The reason for this may be that anterior region whether in maxilla or in mandible is readily available for communication to external environment. Thus in cases of incompetent oral seal, necrotic and infected wounds become an attractive substrate for flies for oviposition. Posterior parts are affected in cases where there is ingestion of larvae with food.

Two out of eleven patients were suffering from advanced stage of adenoid cystic carcinoma, while two were diagnosed cases of oral squamous cell carcinoma. Another female patient was an undiagnosed case of perforated ulcer in right parotid region and clinical suspicion was that of salivary gland malignancy. The association of maggots with malignancies has been described in literature. Daltoe et al described the occurrence of extensive myiasis in a patient suffering from un-attended squamous cell carcinoma.¹⁶ Oral myiasis is a common occurrence in open skin malignancies like basal cell carcinomas and squamous cell carcinomas.¹⁷ This usually occurs in end stage diseases, when general condition of the patient is cachexic and debilitating. Another factor associated with infestation in malignant wounds is due to the fact that such patients are often victims of social isolation due to the necrotic and foul smelling condition of the wounds. This necrotizing material attracts the flies leading to deposition of ova.

It is important that the household members are made aware of possibility of this condition as these patients are often at the mercy of other people for wound care.

Chronic wasting and debilitating disease is another important risk factor for oral myiasis. One patient was suffering from liver cirrhosis due to hepatitis C and was in coma due to hepatic encephalopathy. The patient had a traumatic ulcer on labial mucosa in which maggots were found. Patient had altered mental state as well. Thus bedridden patients, hyper salivation combined with open wounds and neglected hygiene serve as ideal predisposing factors for myiasis to occur. In a case report by Sharma A, it was established that myiasis is a condition in patients with special health needs and thus proper education of people taking care of such patients is necessary.¹⁸ Cerebral palsy is another condition that is often associated with myiasis. In the present case series maggots were found in a 21 year old patient with cerebral palsy and 12 year old mentally handicapped child. Similar findings were reported by Shinohara.¹⁹ Kamala reported the occurrence of myiasis in an 11 year old girl with severe neurologic deficit.²⁰ Kumar also reported similar condition in a 20 year old male boy.²¹ Besides that other case reports also describe the frequent occurrence of myiasis in patients with cerebral palsies, epilepsy, hemiplegic and mentally challenged patients.^{22,23,24} People with physical and mental disabilities usually suffer because they lack the dexterity to maintain proper cleaning. This combined with prolonged mouth opening and drooling of saliva makes it easy for fly to infect the area.²⁵ Again these are the patients who are completely dependent upon their care takers for health care. Due to lack of proper health education these children are often neglected leading to such drastic results.

Oral myiasis can also occur in wounds afflicted with fire arm injuries. In present series two such cases were found. In one case reconstruction of defect was carried out using a Pectoralis Major flap. Reason for occurrence of myiasis in this setting may be explained by the fact that bulky flap in anterior parts of oral cavity leads to improper oral closure. Thus prolonged mouth opening coupled with infected nature of gunshot wound facilitates the deposition and feeding of larvae.

In all of the above cases, management was directed at cleaning and disinfecting the wounds. This was done by thorough irrigation and removal of necrotic slough and tissues from the wound. It is important to remove the necrotic slough as this serves as substrate for larvae to feed on. These larvae are tightly anchored with help of hooks making it difficult to mechanically remove them. In order to facilitate removal the use of asphyxiating agents have been reported in literature. These agents cause the larvae to come out from where

they can be easily removed. Such agents include ether, chloroform, olive oil and turpentine oil.²⁶ Irrigation followed by mechanical removal of larvae should be carried out. This is important as it creates an anaerobic environment, in infected wounds so that further deposition and development of larvae is prevented.²⁷

After removal larvae should be immersed in hot water for 30 sec. For preservation of larvae 50 or 70 percent ethanol solution should be used. These measures are important so that specie of causative organism may be identified.³

Besides local measure systemic treatment with Ivermectin was also carried out in two patients. Ivermectin is a semi-synthetic macrolide antibiotic, isolated from *Streptomyces avermitilis*. This drug was declared to be safe in use for humans in 1993.²⁸ According to Liberio, ivermectin is a safe drug with no adverse renal or hepatic dysfunctions after oral use.²⁹ In severe cases it is given orally in doses of 150-200 mg/kg body weight.³⁰ Myiasis has been successfully treated with Ivermectin however Gealh reported failure even with such high doses after 5 days of treatment.³¹ Besides these measures proper hydration and nutrition is also important to maintain for patients and this was carried for all the patients in current series.

CONCLUSION

Oral Myiasis is a serious and debilitating condition associated with infected and necrotic wounds. Moreover it occurs in higher frequency in people with special health care needs and mostly in anterior part of oral cavity.

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