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RESEARCH ARTICLE

ORAL MYIASIS: A CASE REPORT

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Abstract

Myiasis is a parasitic infection manifesting in skin and mucous membrane by developing larvae(maggots). Oral myiasis is a rare disease in humans associated with poor oral hygiene, suppurative oral lesions, alcoholism, and poor manual dexterity. Myiasis arises from the invasion of the body tissues or cavities of living animals or humans by maggots or larvae of certain species or flies mainly from the order Diptera. Myiasis is still 'rare' and 'unique' owing to the fact that the oral cavity rarely provides the necessary habitat for a larval life cycle. The present article reports a case of oral myiasis in a mentally challenged female patientwith poor oral hygiene involving 150 larvae.

Introduction:-

Myiasis is derived from theGreek word "myia" meaning fly whereas "iasis" means disease and refers to infestation of living tissues of animals or humans by fly larvae.[1]The term was coined by entomologist Frederick.W. Hope in 1840 and was first described 1909 by Laurance.[2][3]Zumpt described the condition as, 'Infestation of live human and vertebrate animals by dipterous larvae, which atleast for a certain period feed on host's dead or living tissue, liquid body substances or ingested food.[4]The most common flies that are the basis of human infestation are Dermatobia hominis and Cordylobiaanthropophaga.[5] Usually, the fly lays over 500 ova in open wound and diseased tissue. The disease is more common in tropical and underdeveloped than in the developed world.[6]Male sex is the most prevalent[1][6],mainly explained by outdoor activities and neglect in terms of personal hygiene compared to women.In the head and neck, the most commonly affected regions are oral cavity, ears, eyes, nose, paranasal sinuses, lymph nodes, and mastoid region.[6]

Oral factors like incompetent lips, poor hygiene, alcoholism, extraction wound, trauma are predisposing factors for occurrence of oral myiasis in patients with special needs.Other contributing factors are low socioeconomic status, homelessness, medical comorbidities,and senility. This draws attention to the promotion of greater care for these individuals as well as the implementation of public policies aimed at this most vulnerable population.

The two main systems of classification are anatomical and ecological.Anatomical is further divided into Sanguinivorous or bloodsucking, cutaneous myiasis, furuncular and migratory, wound myiasis and cavitary myiasis.[1] Ecological classification is sub-divided into: Obligatory (when larvae develop in living tissue); Semi

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specific or Facultative (when maggots feed on necrotic tissue);Accidental or pseudo myiasis (when larvae ingested along with food). [7]Oral myiasis is caused by flies larvae which belongs to either of the three families of Diptera, the Oestridae, Calliphordae and Sarcophagidae, which feed on dead and living tissues.[1] Oral myiasis can be of two types namely primary and secondary based on their order of occurrence i.e., infection involving palate or paranasal sinus etc., are considered to be primary and those which gain entry from the primary site and are transported at a distant site is referred to as secondary. Primary myiasis is commonly caused by biophagous larvae (which feeds on living tissue), is common in cattle but rare in humans. When primary myiasis occurs in humans it is serious and is due toCochliomyiahominivorax larvae ("varejeira" fly) that lay 20–400 eggs on exposed wounds. The larvae are ravenous and destroy many integral tissues and can lead to serious life-threatening hemorrhage. Secondary myiasis is one that is caused by thenecro-biophagous flies (which feedson dead tissue). Secondary myiasis is more common and usually targets patients with necrotic cavity lesions.[8]

Several types of treatments for oral myiasis have been reported in the literature, varying according to geographic region and ranging from the use of ivermectin to the topical application of oils and the use of ether and chloroform, associated or not with manual removal.[6]

The present paper reports a case of oral myiasis in a 46 years old female with poor oral hygiene and mental retardation.

Case Report

A 46 years old mentally challenged female patient reported to the Department of Oral Medicine and Radiology with the chief complaint of swelling and burning sensation around mouth for the past four days. The patient relatives noticed the swelling and worms within the upper and lower lip and left corner of mouth and brought her for medical intervention(Figure 1). The patient was mentally unstable since 5-6 years.The patient lived in unclean conditions, often unattended and kept in open areas near animals. Any history of trauma couldn't be elicited. However, she had severe, continuous pain from the wound. The patient's relative also gives a history of tooth pain since 5-6 months and nocturnal mouth breathing. On extraoral examination she had persistent mouth opening secondary to incompetent lips, and periorbital edema, with swelling of the entire upper and lower lip with severe involvement of the left side. The nasolabial fold on the left side was obliterated.

Intraoral examination revealed a necrotic area in the maxillary anterior region involving the vestibular sulcus and labial mucosa extending from the right canine to the left first molar region where several maggots were seen peeking from inside. The maggots were found encroaching maxillary and mandibular labial mucosa and left buccal mucosa with the destruction of the left corner of the mouth (Figure 1). The oral hygiene was poor with an unpleasant odor.

NCCT PNS revealed soft tissue thickening on a bilateral premaxillary region containing a hypodense tract within communicating with skin, which was strongly suggestive of infective etiology.

The first attempt was to flush the cavity with normal saline which helped remove superficial maggots. Then a cotton bud impregnated with turpentine oil was placed at the opening of the cavity for 10 to 15 minutes followed by the manual removal of approximately 150 living maggots with forcep (Figure 2). This procedure was performed twice daily. The oral cavity was free from maggots by the third day (Figure 3),however perioral edema persisted(Figure 4). Broad spectrum antibiotics and analgesics like Tab. Augmentin 625mg bid, Tab. Zerodol SP bid, Metronidazole 400mg tid with pan-40 od for 3 days were prescribed. The edema subsided by the fifth day (Figure 5). Together with this, the patient was also advised to follow strict oral hygiene instructions.

Microbiological examination revealed that maggots belonged to the ChrysomyaBezziana species. The patient was followed for 15 months, and no fresh episode was seen.

Discussion:-

Myiasis is defined as the 'infestation of live human and vertebrate animals with dipterous larvae that feed on host's dead or living tissue, liquid body substances or ingested food.[4] They infect several organs which shows communication with the external environment like the urogenital, nasopharynx, intestines, cutaneous structures, and oral cavity. It occurs in patients with poor oral hygiene, ill-fitting dentures, uncleaned prosthesis, advanced periodontal disease, tooth extraction sites, thumb-sucking habits, seizures, and incompetent lips. Alcoholism,

senility, mental retardation, hemiplegia, and mouth breathing during sleep may facilitate the development of oral myiasis.[1]

A review of the available literature showed that it was most commonly seen in patients with disorders of the central nervous system like the neurological deficit, learning disability, etc. and who need assistance and are not able to take care of themselves. This is the main cause of poor hygiene which eventually lead to the development of myiasis.[1]

The males show greater predilection compared to women. This can be attributed to adverse habits like smoking, tobacco chewing, etc. which lead to poor oral hygiene, sleeping outdoors, and spending more time outdoors. It is not confined to any particular age, it may occur in both children and older adults.[1][6] In most of the reported cases, the myiasis occurs predominantly in the anterior palate and gingiva which suggests a direct inoculation of fly in these tissues. In a few other cases, it showed other sites involving the floor of the mouth, mandibular molar region, etc., which shows to have a possibility of ingestion of food contaminated with eggs or larvae of varying species, as it would be difficult for the fly to infest the tissues of the molar region directly. It usually presents with painful ulcers along with facial edges and fever. A few cases also present with a crawling sensation and smelly discharge. In our case, an unnoticed trauma was suspected to be an etiologic factor, and lack of personal as well as oral hygiene along with negligence of the caretaker delayed initial treatment.

Myiasis is a worldwide phenomenon, the prevalence of which varies.[9] It is more common in the tropics and subtropics and in countries in the northern hemisphere.[9] A study by Juliana et al endorses that India and Brazil are the most affected countries. [6] The tropical climate of these countries favors the growth of larvae.[10] The flies responsible for this condition prefer warm and humid temperatures, therefore myiasis is restricted to summer months in temperate zones and all year round in the tropics. It is also called as “traveler’s disease” as it is most commonly seen in travelers returning from the tropics and subtropics.[11]

At least 86 different species of Diptera can infect man with larvae that invade skin and body cavities.[12] The genera usually cause oral myiasis to include Sacrophagidae, Calliphoridae, Oestridae, and Muscidae from the Diptera order.[5] In our case, ChrysomyaBezziana species were identified. Chrysomyabezziana belongs to the Calliphrodae genre, it is an obligatory myiasis producer whose larvae develop in living tissues.[7] Though rare Chrysomyabezziana is widely distributed throughout Asia and tropical Africa. C. bezziana differs from other maggot infestations by its ability to cause tissue invasion even without preexisting necrosis.[13]

Adult females lay eggs on mammals at the site of superficial wounds in body orifices. The life cycle of a fly begins with the egg stage followed by the larva, the pupa, and finally the adult fly.[1]Sood et al described that the larva can be divided into three stages depending upon the size and life span.[14] During the first and second stages, the larva has segmental hooks which are directed backward. This hook helps the larva anchor itself to the surrounding tissue. The presence of these hooks made the removal of the larva from its host difficult.[13] Eggs hatch in less than a week and larvae burrow into the host’s tissue for nutrition. The larval stage lasts from six to eight days during which period they are parasitic to human beings. Sood et al, further mentioned that the larvae release toxins to destroy the host tissue.[14] Further, the superimposed bacteria release proteolytic enzymes that decompose the tissue and the larvae feed on this rotten tissue.[15] The infected tissue frequently releases foul-smelling discharge. These larvae are photophobic and therefore tend to hide deep into the tissues and also secure a suitable niche to develop into a pupa.[13] In 5-7 days, the fully developed larva comes out of the wound and pupates in a dry and cool environment. The mature larvae are 3 to 9 mm long, creamy white in color, cylindrical, with a tapering head.[16] The number of larvae present in various reports ranges from few to multiple depending on viable eggs deposited by flies which may be in the range of a few hundred. This in turn will determine the extent of host damage. In our case, approximately 150 larvae were removed, and necrosis of oral and perioral tissue was extensive.

Treatment comprises systemic and local measures. Surgical debridement of the wound and extraction of larvae are most commonly done under local anesthetic or general anesthesia.[9] The occlusion or suffocation approach forces these larvae to reach the surface in search of air where they can be removed with the help of forceps or tweezers. After removal, the larvae should be killed by immersing them in very hot but not boiling water for 30 seconds which prevents decay and helps to maintain the natural color.[1] Later, it should be preserved in a solution of 70 to 95% ethanol or 70% isopropyl alcohol.[5] The use of formalin is contraindicated as it causes the tissue to harden making them difficult to process. Some of the agents that have been used to suffocate are turpentine oil, mineral oil, ether, chloroform, ethyl chloride, mercuric chloride, creosote, saline, systemic butazolidine, or thiabendazole petroleum

jelly, heavy oil, beeswax, raw meat, nail polish, adhesive tape, butter, chewing gum, whitehead varnish, and native tobacco leaf.[9] In our patient, we used a cotton bud impregnated with turpentine oil which was placed at the orifice of the socket for approximately 10-15 min, forcing the larvae to come to the surface in search of oxygen, making extraction easy. Secondary infection of the wound by bacteria was controlled by administrating broad-spectrum antibiotics such as ampicillin and amoxicillin systemically. [17] More recently, topical, and oral ivermectin has been advocated against maggots in humans. Ivermectin is a semisynthetic macrolide given orally in just a single dose of 150–200 μg/kg body weight.[18][19][20] It is assumed that ivermectin blocks nerve impulses to the nerve endings through the release of gamma-aminobutyric acid, linking to the receptors and causing palsy and death of maggots. There are no systemic complications and healing after debridement is uneventful.

Conclusion:-

Although this is not a fatal disease, but the knowledge of this infestation is necessary from a preventive, diagnostic, and curative standpoint. Dental personnel dealing with susceptible patients must educate the patient, family members, and caretakers about preventive measures. The preventive measures include the maintenance of proper oral and personal hygiene. Further public awareness should be done to control the fly population by spraying insecticide, basic sanitization, efficient waste disposal systems, providing the patient with a physical barrier, and good personnel and nursing care.

Figures

Figure 1:- Shows several maggots found encroaching maxillary and mandibular labial mucosa and left buccal mucosa with the destruction of the left corner of the mouth.

Figure 2a and 2b:-Manual removal of approximately 150 living maggots with forcep.

Figure 3:- Shows that the oral cavity was free from maggots by the third day.

Figure 4:- Shows healing lesion by the fifth day.

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