Case Report

Rare Orbital Myiasis in Post Exenteration Socket: A Case of Orbito Maxillary Mucormycosis

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ABSTRACT

We report a case of orbital Myiasis in post-exenteration socket in a 60-year-old diabetic female who was diagnosed with right orbito-maxillary mucormycosis and underwent exenteration and supra structure maxillectomy, seven years back. Turpentine oil packing and hydrogen peroxide wash was given followed by removal of the maggots with a blunt forceps. The collected maggots were stored in 10% formalin followed by maggot identification. Maggots were of blowfly species, *Chrysomya Bezziana*. These maggots have a unique tendency to invade healthy tissues extensively besides necrotic tissues. This is probably a rare instance where orbital myiasis had occurred over the granulation tissue covering posterior orbital bones extending to the floor of the maxillary antrum. She was primarily treated with broad spectrum antibiotics, anti-parasitic agents followed by manual removal of the maggots subsequent to which the wound began to heal by secondary intention.

Key Words: Mucormycosis, Orbital myiasis, Maggots, Blowfly, Exenteration.

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INTRODUCTION

Myiasis is infestation of live animal or human tissues by blowfly larvae which feed on host necrotic or living tissues. Keyt reported ocular myiasis for the first time in humans in 1900 and then by Elliotin 1910.[1,2] Orbital myiasis is a rare condition, accounting for less than 5% of cases commonly reported.[3] Herein, we report a case of orbital myiasis caused by *Chrysomya Bezziana* (Villeneuve, 1914) in a geriatric patient with immunocompromised status who underwent exenteration and supra structure maxillectomy seven years back, following orbitomaxillary Mucor mycosis. Orbital myiasis in post exenteration socket is a rare occurrence and without early intervention, it can be life threatening because of its inevitable intracranial spread.

Case Presentation

A 60-year-old diabetic female belonging to rural background, with a history of exenteration, subsequent to orbito-maxillary mucormycosis, was brought to emergency department by her son with pain, redness, swelling and creeping sensation along right side of the face for three days. She lived in unhygienic environmental conditions, had a sedentary lifestyle and no self-care. Her general condition was stable otherwise. Local examination revealed right sided oedema and hyperaemia. The socket was filled with numerous maggots colonizing in the small burrows (Figure 1 and 2) and few were visible on the floor of the maxillary antrum, giving a fetid odor to her. The left eye was pseudophakic with best corrected visual acuity of 20/80.Anterior segment was quiet with unremarkable posterior segment. The diagnosis of orbital myiasis with maxillary extension was made.

Investigations revealed normal hemogram. Her blood sugar levels were 356mg% and urine analysis revealed proteinuria. On Magnetic Resonance Imaging, no evidence of abnormal enhancement noted intracranially and there was no involvement of the

Fig. 1: Right Orbital Myiasis.

Fig. 2: Maggots stored in 10% Formalin.

frontal and ethmoidal sinus. Though the floor of the mandible was visible with naked eye, it was evaluated endoscopically which revealed presence of few maggots. Considering the risk of potential infections, she received intravenous ceftriaxone and a single dose of tablet Ivermectin (12mg) and Albendazole (400mg). She was also shifted from oral hypoglycemics to subcutaneous insulin injections under the supervision of a physician. Turpentine oil packing and hydrogen peroxide wash was given followed by removal of the maggots with a blunt forceps. The socket and the floor of the maxillary antrum were examined for maggots for three consecutive days, along with sterile dressings. By the fourth day, it was free of maggots. The patient came to us for follow-up after one week and the wound had started to heal by secondary intention with the formation of healthy granulation tissue. Subsequently, the patient was lost to follow up. The collected maggots were stored in 10% formalin and sent to department of Zoology and Environmental Sciences, Punjabi University, Patiala, for identification of maggots. Morphological analysis of extracted larvae confirmed it to be of third instar larvae of blowfly *Chrysomya Bezziana.*

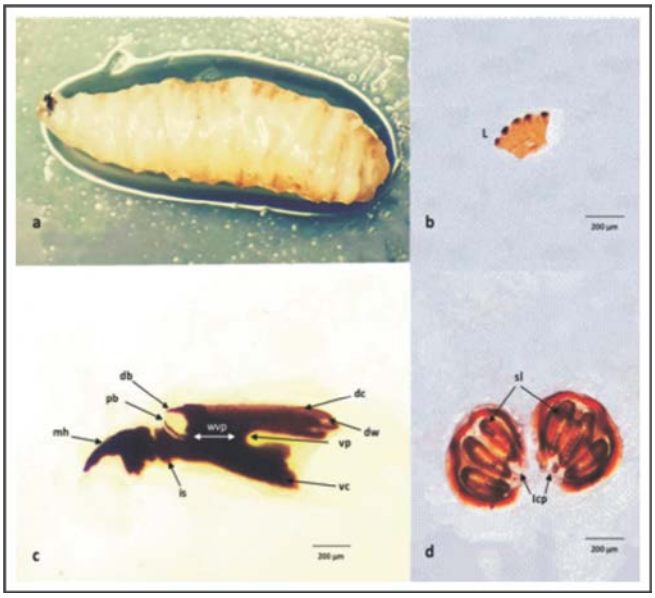

Fig. 3. Description of *Chrysomya Bezziana*larvae
Fig-3. a. Third instar Larva of *C. Bezziana*(10x) **b.** Anterior spiracle (Five lobes) (10x) **c.** Chephalopharyngeal Apparatus of third instar larva of *C. bezziana* (10x) **d**. Posterior spiracle (Peritreme open) (10x)
Abbreviations: db- dorsal bridge, **dc-**dorsal cornua, **dw-**dorsal window,**is**- intermediate sclerite, **mh**- mouthhook, **pb**- parastomal bar, **vc**- ventral cornua, **vp-** ventical plate, **wvp-** width of ventical plate, **l-** spiracular lobes, **lcp-** incomplete peritreme, **sl-** spiracular slit

DISCUSSION

Ophthalmic myiasis is defined as infestation of ocular or orbital tissues by larvae of various flies most

Fig. 4*: Chrysomya Bezziane* adult fly lateral view. Abbreviationa: g-gena, as- anterior spiracle.

commonly being sheep botfly (Oestrusovis), screw-worm fly (*Cochliomyia Hominivorax*, *Chrysomya Bezziana*), human botfly (*Dermatobia hominis*) and the cattle botfly (*Hypoderma Bovis*).[4] Myiasis, a noun derived from Greek word (Myaor fly) was first proposed by Hope to define diseases of humans caused by Dipteran larvae.[5] The larvae identified in present case was of *C. Bezziana* (Fig. 4a). Identifying features of *C. Bezziana* larvae leading to diagnosis are anterior spiracles having five lobes (Fig. 4b), the shape of cephalopharyngeal skeleton (Fig. 4c] and posterior spiracles having open peritreme with stout spiracularslits[6] (Fig. 4d).*C. Bezziana* is commonly known as old world screwworm. Adult fly is 8–12 mm long (Fig. 5). Females lay about 150 – 600 eggs on wounds and mucous membranes which are contaminated with discharges. The eggs hatch within 8–24 hours and newly emerged larvae burrow deep into the underlying tissues where they commonly remain congregated together. The larvae can reach the third instar stage according to environmental conditions. At optimum temperature development is quick, whereas at low or very high temperature development is altered. After attaining post feeding stage in five to six days, they move out of the wound and fall on the ground, where they bury and undergo pupation.

Numerous similar studies were found where previous history of eye surgery was a risk factor for myiasis. Devoto et al, mentioned orbital myiasis in an enucleated eye by *Cochliomyia Hominivorax* which was treated by implant removal and manual removal of maggots.[7]Puthran et al, observed myiasis in an empty socket, but species of maggots was unknown and manual removal of the maggots was done.[8]Kalamkaret al, reported myiasis in an eviscerated socket by *Chrysomya Bezziana* where again manual removal was the modality of treatment.[4] Rana et al. reported myiasis by *Chrysomya Bezziana* in an eviscerated socket and both medical and surgical treatment was done.[9] Bussieres et al, reported the first case of myiasis in an exenterated socket by *Lucilia Sericata* where mechanical extraction was the treatment of choice.[10] In our case, *Chrysomya Bezziana* was the cause of myiasis in the post exenteration socket which is a primary blowfly species responsible for causing myiasis as well as tissue damage. This case study is a first report from India, where myiasis has occurred in an exenterated socket along with maxillary extension.

Till the time, such patients reach outpatient department, either they have localized infestation with necrosis in the socket or it has invaded surrounding structures like paranasal sinuses. The invasion of intracranial space through orbital apex causes fatal results. Various treatment options include manual removal, surgical debridement, and radical surgical procedures. As maggots avoid bright light and tend to resist removal by digging in the burrows with their hook like structures called cephalopharyngeal apparatus.[8] Hence, before manual removal, various suffocating agents like turpentine oil, petroleum jelly or liquid paraffin are recommended which force the maggots to resurface for air supplemented by wash with dehydrating agents like isopropyl alcohol or hydrogen peroxide that further aids in paralyzing and removal of the maggots with the help of blunt forceps. All the maggots were removed manually in multiple sittings within three days. Larvicidal drugs like Ivermectin and Albendazole further decreased the load. Broad spectrum antibiotics minimize the risk of potential bacterial infections in diabetic patients. However, Puthrane t al,[8] is of the view that secondary pyogenic infection is precluded by the antibacterial activity of the maggots themselves.

CONCLUSION

The main predisposing factors in present case were poor self-care, sedentary lifestyle, immunocompromised status, lack of knowledge and education, proximity to farms and history of previous surgery where granulation tissue served as a fertile bed for the infestation of larvae. People should be made aware regarding personal hygiene and the essentiality of prompt treatment to prevent devastating

complications. Purpose of present case study is to make medical practitioners aware of orbital myiasis as a post-operative complication of exenteration surgery and its consequences if remain untreated for longer duration of time.

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Authors' Designation and Contribution

Arushi Kakkar; Senior Resident: *Concepts, Designing, Literature Search, Manuscript Preparation.*

Madhu Bala; Assistant Professor: *Data Acquisition, Data Analysis, Manuscript Editing, Manuscript Review.*