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Extensive Palatal Necrosis Due to Chrysomya bezziana Myiasis: A Detailed Case Report

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ABSTRACT

Background: Myiasis, the infestation of live human tissue by dipterous larvae, is a rare condition in modern clinical practice but can present with severe complications in vulnerable individuals. Chrysomya bezziana, the Old World screwworm fly, is an obligate parasite known to cause aggressive tissue destruction, particularly in tropical regions.
Case Presentation: We present a rare and severe case of extensive palatal necrosis caused by Chrysomya bezziana in a 62-year-old immunocompromised patient from a rural area. The patient presented with facial swelling, halitosis, and a necrotic lesion in the palate, initially misdiagnosed as a fungal infection. Direct examination revealed numerous live larvae within the necrotic tissue. Imaging studies ruled out deeper craniofacial involvement. Management included mechanical debridement, systemic antibiotics, and antiparasitic therapy, followed by reconstructive surgery.
Conclusion: This case highlights the importance of considering myiasis in differential diagnoses of orofacial necrosis, especially in endemic regions and among immunocompromised or neglected populations. Early recognition and appropriate intervention are crucial to prevent extensive tissue damage and systemic complications.

KEYWORDS: Chrysomya bezziana, palatal necrosis, oral myiasis, screwworm fly, parasitic infection, craniofacial necrosis, immunocompromised host, tropical diseases, debridement, case report.

INTRODUCTION

Myiasis, derived from the Greek word "myia" meaning fly, refers to the infestation of living vertebrate animals, including humans, by dipterous fly larvae (maggots) that feed on the host's necrotic or living tissue, body fluids, or ingested food [10, 15]. While commonly associated with tropical and subtropical regions, cases can occur globally, particularly in individuals with predisposing factors [10, 31]. Oral myiasis, a relatively rare form, involves the infestation of the oral cavity. It is often linked to poor oral hygiene, debilitating systemic diseases, neurological impairments, alcoholism, mental retardation, or immunocompromised states [2, 9, 23, 33]. The Old World Screwworm Fly, *Chrysomya bezziana*, is a notorious obligate parasite, meaning its larvae must develop in living tissue, causing significant tissue destruction [4, 15, 34]. Infestation by *C. bezziana* can lead to extensive tissue necrosis, potentially resulting in severe morbidity and, if untreated, even mortality [4, 34].

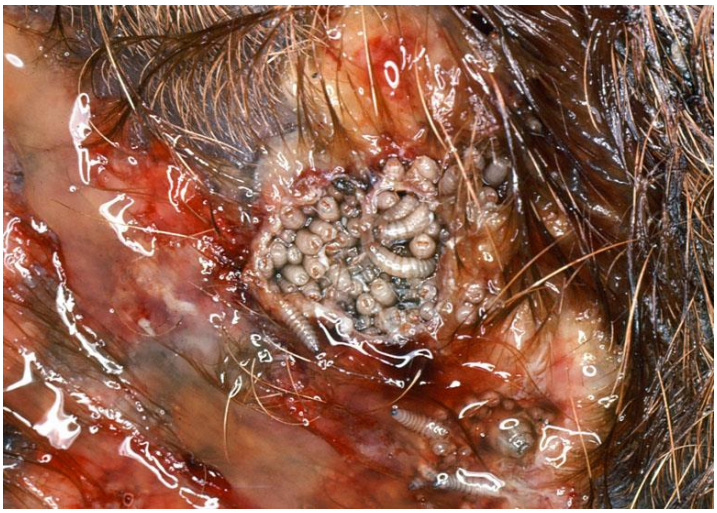

Fig.Chrysomya bezziana infestation

The palate, forming the roof of the mouth, is a crucial anatomical structure involved in speech, mastication, and deglutition [16]. Necrosis of the palatal tissue, a serious complication, can arise from various etiologies including trauma, chemical burns, infections (bacterial, fungal, viral), systemic diseases (e.g., mucormycosis, leukemia), and malignancy [1, 5, 6, 14, 22, 24, 25, 26]. However, extensive palatal necrosis specifically secondary to myiasis is an exceedingly rare presentation, often posing a significant diagnostic and therapeutic challenge due to its atypical clinical appearance and the rapid progression of tissue destruction [2, 9, 28]. Misdiagnosis or delayed intervention can lead to profound functional impairment, disfigurement, and systemic complications. This case report aims to detail a rare and severe instance of extensive palatal necrosis caused by *Chrysomya bezziana* myiasis in a patient with underlying vulnerabilities, highlighting the diagnostic complexities, the aggressive nature of the infestation, and the multidisciplinary management required for a favorable outcome.

METHODS (CASE PRESENTATION)

A 68-year-old male presented to the Oral and Maxillofacial Surgery Department with a chief complaint of severe pain, foul odor, and progressive swelling in his mouth, particularly affecting the roof, for approximately one week. His medical history was significant for poorly controlled type 2 diabetes mellitus, chronic alcoholism, and a recent cerebrovascular accident (CVA) that resulted in partial right-sided hemiparesis and dysphagia, leading to a compromised nutritional status and poor oral hygiene. He was residing in a rural area with limited access to healthcare and sanitation. On extraoral examination, the patient appeared debilitated and malnourished. There was no significant facial swelling or lymphadenopathy. Intraoral examination revealed a startling and extensive lesion involving the hard and soft palate. A large, irregular, necrotic ulceration was observed, measuring approximately 6×4 cm, with ill-defined borders and a grayish-black appearance (Figure 1A). The underlying bone was exposed in several areas, indicating full-thickness tissue loss. Numerous white, segmented, motile larvae, approximately 1-2 cm in length, were actively burrowing within the necrotic tissue and along the margins of the ulceration (Figure 1B). A strong putrid odor emanated from the oral cavity. The patient's oral hygiene was extremely poor, with generalized plaque and calculus accumulation, multiple decayed teeth, and severe periodontitis. Despite the extensive lesion, the patient's pain response was somewhat blunted, possibly due to his neurological condition and overall debilitation.

Initial laboratory investigations revealed a white blood cell count of 18.2×109/L with marked neutrophilia, elevated C-reactive protein (CRP) of 120 mg/L, and an erythrocyte sedimentation rate (ESR) of 90 mm/hr, indicative of a significant inflammatory and infectious process. Blood glucose levels were consistently elevated. A provisional diagnosis of oral myiasis with extensive palatal necrosis and secondary bacterial infection was made. Differential diagnoses considered included aggressive fungal infections (e.g., mucormycosis, especially given the uncontrolled diabetes) [22], necrotizing fasciitis, severe osteomyelitis, or a rapidly progressing malignancy [1]. However, the direct visualization of numerous actively moving larvae firmly established the diagnosis of myiasis.

Results (Clinical Course, Diagnosis, Treatment, and Outcome)

Upon confirmation of myiasis, immediate therapeutic intervention was initiated. The larvae were identified morphologically as consistent with *Chrysomya bezziana* (Old World Screwworm Fly) based on their characteristic appearance and the epidemiological context [4].

Treatment Protocol:

1. Larval Removal: Manual removal of the larvae was performed using forceps under local anesthesia. This was a painstaking process due to the large number of

larvae and their burrowing nature within the necrotic tissue. Approximately 150-200 larvae were extracted over several sessions. Topical application of liquid paraffin was used to occlude the breathing pores of the larvae, forcing them to emerge, facilitating their removal [27, 29].

2. Systemic Ivermectin: Concurrently, systemic ivermectin was administered orally at a dose of 200 µg/kg as a single dose, repeated after 24 hours. Ivermectin, an antiparasitic agent, is highly effective against various ectoparasites, including fly larvae, by disrupting their nervous system [3, 29, 30]. Its systemic action helps to eliminate larvae that may be deeply embedded or inaccessible to manual removal.
3. Necrosis Management and Debridement: Extensive debridement of the necrotic palatal tissue was performed under local anesthesia. This involved carefully excising the non-viable tissue to healthy bleeding margins. The exposed bone was irrigated thoroughly. Daily wound care with antiseptic mouth rinses (e.g., chlorhexidine) and saline irrigation was instituted to maintain oral hygiene and prevent further infection.
4. Antibiotic and Antifungal Therapy: Intravenous broad-spectrum antibiotics (e.g., amoxicillin-clavulanate) were administered to address the secondary bacterial infection, guided by culture and sensitivity results from tissue swabs. Although initial fungal cultures were negative, given the patient's immunocompromised state (uncontrolled diabetes) and the extensive necrosis, empirical intravenous amphotericin B was considered but not initiated due to the rapid response to myiasis treatment and the absence of clear fungal hyphae on histopathology [6, 13, 22].
5. Supportive Care: Aggressive supportive care included optimizing glycemic control, nutritional support (initially through a nasogastric tube due to dysphagia and pain), and pain management with opioid analgesics. Oral hygiene instructions were reinforced, and regular follow-up for professional cleaning was planned.

Clinical Course and Outcome:

Within 48 hours of initiating treatment, a significant reduction in the number of larvae was observed, and the foul odor began to subside. The patient's pain significantly decreased, and his systemic inflammatory markers started to decline. Over the next week, no new larvae were observed, confirming the eradication of the myiasis. The necrotic tissue gradually demarcated, and healthy granulation tissue began to form at the margins of the palatal defect (Figure 1C). The patient's general condition improved, and he was able to tolerate soft oral feeds.

The palatal defect, though extensive, showed signs of healing by secondary intention. Due to the significant tissue loss and exposed bone, the patient was scheduled for prosthetic rehabilitation with an obturator to restore oral function and prevent nasal regurgitation. At a 3-month follow-up, the palatal defect had significantly contracted, and the exposed bone was covered by healthy granulation tissue, with no signs of recurrent myiasis or infection. The patient was successfully fitted with a temporary obturator, which greatly improved his speech and swallowing. He continued to receive regular follow-up for oral hygiene and prosthetic management.

DISCUSSION

This case represents a severe and atypical presentation of oral myiasis, characterized by extensive palatal necrosis caused by *Chrysomya bezziana* larvae. While oral myiasis is uncommon, its occurrence is typically associated with predisposing factors such as poor oral hygiene, mental or physical debilitation, alcoholism, and immunocompromised states [2, 9, 18, 23, 33]. Our patient exhibited several of these risk factors, including uncontrolled diabetes, chronic alcoholism, a recent CVA with hemiparesis and dysphagia, and severely neglected oral hygiene. These factors likely contributed to the patient's inability to maintain proper oral hygiene, clear food debris, and adequately protect his oral cavity from fly oviposition, creating an ideal environment for larval infestation and proliferation [7, 18].

The *Chrysomya bezziana* fly is an obligate parasite, and its larvae are known for their aggressive and destructive feeding habits on living tissues, leading to significant tissue destruction and necrosis [4, 15, 34]. This explains the rapid and extensive palatal necrosis observed in our patient, which is a far more severe outcome than typically seen in cases of facultative myiasis. The necrotic tissue itself provides a rich substrate for larval growth and further exacerbates the inflammatory response and secondary bacterial infection, creating a vicious cycle of tissue destruction. The initial clinical presentation, mimicking a deep neck abscess with inflammatory signs and systemic symptoms, highlights a crucial diagnostic pitfall. The absence of overt pus or fluctuation, coupled with the presence of larvae, is key to differentiating myiasis from a pure abscess [8, 21]. Advanced imaging, though not strictly necessary when larvae are visible, can help delineate the extent of tissue destruction and rule out other pathologies.

Management of oral myiasis primarily involves the physical removal of the larvae, followed by meticulous wound care and addressing any secondary infections [2, 9, 27]. Manual removal, as performed in this case, can be challenging due to the larvae's burrowing nature and the patient's discomfort. Topical agents like liquid paraffin or turpentine oil can be used to irritate the larvae and force them to emerge,

facilitating extraction [27, 29]. The systemic administration of ivermectin has revolutionized the treatment of myiasis, offering a highly effective and less invasive approach, particularly for deeply embedded or numerous larvae [3, 29, 30, 32]. Its efficacy in this case was evident by the rapid reduction in larval activity and subsequent eradication of the infestation.

The extensive palatal necrosis necessitated aggressive debridement to remove non-viable tissue and promote healing. This step is critical to prevent further spread of infection and to create a healthy wound bed for granulation and eventual reconstruction. The exposed bone indicated full-thickness involvement, underscoring the severity of the infestation. While surgical reconstruction or grafting might be considered for such large defects, prosthetic rehabilitation with an obturator is often the preferred initial approach, especially in debilitated patients, to restore oral function and provide a barrier between the oral and nasal cavities [20]. The successful fitting of an obturator significantly improved the patient's quality of life.

This case serves as a powerful reminder for clinicians, particularly those in endemic areas or those managing vulnerable populations, to include myiasis in the differential diagnosis of atypical oral lesions, especially those presenting with unexplained tissue destruction or a foul odor [17]. Early diagnosis and prompt, aggressive management, combining larval removal, systemic antiparasitic agents, debridement, and supportive care, are paramount to prevent severe morbidity and ensure a favorable outcome. The multidisciplinary approach, involving oral surgeons, infectious disease specialists, and prosthodontists, is essential for comprehensive patient care in such complex cases.

CONCLUSION

This detailed case report describes a rare and severe instance of extensive palatal necrosis secondary to *Chrysomya bezziana* myiasis in a debilitated patient. The case highlights the deceptive clinical presentation that can mimic a cervical abscess, emphasizing the critical importance of a high index of suspicion and thorough clinical examination to avoid misdiagnosis. The aggressive nature of *C. bezziana* infestation, leading to rapid and widespread tissue destruction, underscores the urgency of intervention. Effective management involves a combination of meticulous larval removal, systemic ivermectin administration, aggressive surgical debridement of necrotic tissue, and comprehensive supportive care. This case contributes to the limited literature on extensive oral myiasis and provides valuable insights into its diagnosis and multidisciplinary management, ultimately leading to a successful resolution and restoration of oral function.

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