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Case Report

Nasal Myasis in an Immunocompetent Adult: A Rare Case Report from a Zonal Hospital of Central India

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Abstract

Nasal myiasis is defined as invasion of the nasal cavities by larvae (maggots) of certain dipteran flies. It is a highly unaccustomed Otorhinolaryngological (ORL) emergency with very little literature available. Review of present literature reveals that it occurs in patients with some predisposing factors like immunosuppression, low socio-economic status, mental retardation, chronic granulomatous nasal diseases, long standing and neglected nasogastric tubes etc. Owing to its sporadic nature, the treatment protocols have also varied over time and till date there is no consensus on it. Our reported case is unique from other cases reported so far as our patient was an immunocompetent lady with no known risk factors. She was a homemaker staying in rural setup who also took care of her cattle. The only possible mode of infestation could have been while handling the cows. We managed the case with manual endoscope assisted extraction and turpentine oil irrigation followed by systemic Ivermectin therapy. Patient responded very well to the treatment with all maggots getting removed in a single session. No recurrence occurred till 1 year of follow up.

Keywords: Myiasis; Sinonasal; Ivermectin; Larvae; Maggots; Atrophic Rhinitis; Immunocompetent

Introduction

Nasal myiasis (peenash or scholechiasis) is infestation of nasal cavities by larvae of flies belonging to order Diptera informally referred to as maggots [1]. The earliest description of this rare entity dates back to 1840 but the term was first used in 1940 [2,3]. ORL myiasis is a highly unaccustomed entity affecting cavities of head and neck region mainly nose, mouth, ears and tracheostomy sites. The available literature on nasal myiasis is sporadic tending to be mainly as case reports and very few case series as a result of which there is lack of consensus and a validated protocol [2]. This rare affection mandates that every such case must be reported so as to facilitate a valid analysis.

Here the authors present a rare case report of nasal myiasis in an immunocompetent female with no causative factors. The only apparent risk factor was that she was an animal handler. She was treated successfully with manual extraction of maggots, turpentine oil irrigation and systemic Ivermectin. The patient was thoroughly investigated for underlying causative conditions. However, no such predisposing factors could be ruled in. This rare localized nasal myiasis occurring in a healthy, non-obese adult without any risk factors, therefore, justifies this case report.

Case Report

67 years old female, with no known comorbidities, presented with complaints of acute onset left sided nasal bleed of 2 days duration. It was anterior epistaxis of left side which was also associated with recurrent sneezing episodes and headache. Nasal bleed was scanty in the form of droplets and always followed episodes of sneezing. There was no history of nasal blockage/nasal discharge/facial puffiness, nasal trauma, exposure to toxins or blurring of vision. No past treatment history. Her general examination revealed raised blood pressure. Anterior rhinoscopy revealed minimal mucoid discharge and crusts in bilateral nasal cavities. However, there was no active nasal bleed. On Diagnostic Nasal Endoscopy (DNE), there were numerous photophobic and extremely mobile maggots in her left nasal cavity invading the posterior part of nasal septum, roof of choana and left middle turbinate. Foul-smelling crusts were

present in bilateral nasal cavities indicating poor local hygiene. Further dwelling into her occupation, we got to know that she was primarily a home maker in a rural setup who was taking care of cows kept at the backyard of the house.

Her routine investigations were essentially within normal limits. An urgent Contrast Enhanced Computed Tomogram (CECT) of paranasal sinuses (PNS) was obtained which revealed significant mucosal thickening in the left nasal cavity extending into the left ethmoid sinuses and left nasopharynx. She was taken up for emergency debridement and removal of maggots under general anaesthesia (GA). Intra-operatively, hundreds of maggots were encountered invading mucosa of posterior part of septum, posterior end of left inferior and middle turbinates. All the visible maggots were removed manually with the help of forceps followed by copious saline irrigation. Intraoperatively, turpentine oil was also used for irrigation. Postoperatively, she was managed with intravenous amoxicillin and clavulanic acid (Augmentin™) 1.2 grams 12th hourly for 7 days and tablet Ivermectin (200 mg X 6 days) coupled with saline nasal douching. She responded well and no maggots were found during her OPD follow up with DNEs. All maggots could be extracted in a single sitting.

Discussion

Myiasis (greek, "mya" - fly and "iasis" – disease) is a once in a blue moon, opportunistic infestation of living humans and vertebrates by dipterous eggs or larvae. It can affect any tissue/organ/body cavities of host. It is an extremely distressing condition primarily reported from tropical, subtropical and third-world nations. It rarely occurs in temperate countries [4].

Larvae of these flies usually feed on decomposing animal matter. So commonly they are found feeding upon necrotic tissues in humans. Nasal myiasis gets classified as obligatory (maggots survive in and feed on non-necrotic tissue of living host to complete their larval development), facultative/ accidental (larvae are occasionally ingested or deposited in tissues and become accidental parasites) [5]. Palatal and/or septal perforation and fatal meningitis can occur if this Otorhinolaryngological (ORL) emergency is not addressed in time [1]. Other complications like collateral spread, orbital and facial cellulitis, tonsillar and posterior pharyngeal wall ulcers have been reported in the literature [6]. When host immunity mounts a response against these larvae, patient is exposed to development of angioedema. This, therefore mandates early detection and prompt management of this rare disease entity. Contrary to other sites of maggots infestation, nasal myiasis is sinister as it can cause soft tissue and bony destruction leading to conditions like osteomyelitis, pneumocephalus, secondary meningitis and bacterial sepsis which can potentially produce fatal outcomes [5].

This entity is prevalent worldwide especially in tropical counties with high humidity (favors life cycle of fly). Nasal myiasis is reported in developing and rarely also in developed countries (returned travelers) with male to female ratio of 2:3. Its common associations reported are nutritional deficiency, diabetes mellitus, mental retardation, bed-ridden state, draining wounds, low socio-economic status, tropical weather, summer months (June to September), filthy living conditions [1,4] . Factors which impede wound healing like smoking, morbid obesity and hyperglycemia also contribute towards development of myiasis [7]. It can occur as nosocomial nasal myiasis in hospitalized patients who are either immunocompromised, intubated or comatose. Our case report is unique as our patient had no risk factor for developing this infestation. She was an apparently healthy, non-obese adult with good nutritional status and no comorbidities. Nasal myiasis is rarely reported in an immunocompetent adult without any risk factors/ predisposing conditions. This case occurred during winters (December) which is contrary to its routine epidemiology.

The clinical features are the result of presence and movement of larvae like foreign body sensation, itching, nasal and/or facial pain, mucopurulent or sanguinous rhinorrhoea, epistaxis, malodour and anosmia. If untreated, may lead to extensive necrosis and sloughing of intranasal tissue to penetrate deeper areas. Early detection and prompt intervention are therefore cornerstones of successful management [8].

The diagnosis of nasal myiasis is typically clinical. Examination shows nasal mucosa to be edematous, occasionally ulcerated mucosa surrounded with necrotic tissue and crawling maggots/ larvae. However, an additional battery of tests is also essential to find the cause of nasal myiasis [9]. Specific investigations must be undertaken to look for chronic granulomatous diseases, leprosy, tuberculosis, atrophic rhinitis etc. [1]. A Computed Tomogram of nose and paranasal sinuses (CT nose & PNS) is useful in ascertaining extent and spread of the infestation. The maggots are hazardous due to their potential for intracranial and intra-orbital spread [10].

Treatment primarily includes endoscopic manual extraction of the larvae along with local debridement of diseased sinonasal mucosa. Turpentine oil/dilute chloroform and mineral oil irrigations are adjuncts to manual extraction. Topical irrigation alone is

often insufficient to achieve complete eradication of larvae in relatively inaccessible areas like ethmoid sinuses and Eustachian tube which mandates systemic Ivermectin therapy [11]. Ivermectin (endectocide) causes hyperpolarization of the neurons of maggots culminating into muscle paralysis especially of the pharynx and eventual death of the maggots. Recent studies also propose some immune-modulatory role of Ivermectin making the parasite more susceptible towards host's immune clearance. Endoscopic surgery enables comprehensive removal of maggots by providing excellent magnified view and removal of dead tissues on which these parasites feed [12].

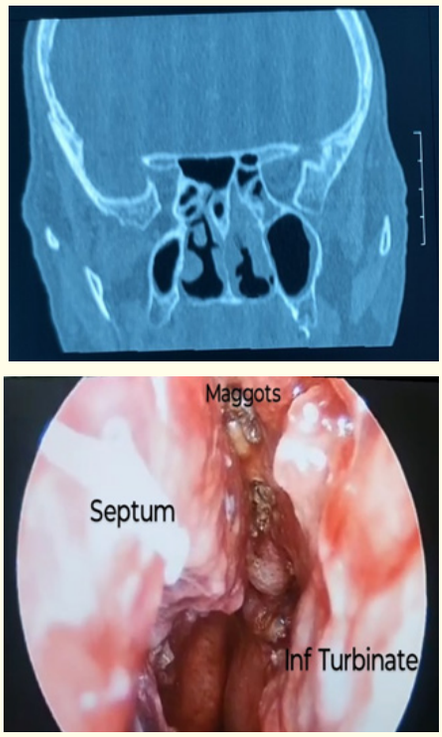

Figure 1a: NCCT Nose and PNS showing significant mucosal thickening in the left nasal cavity extending into left posterior ethmoid sinuses.

Figure 1b: DNE showing maggots in the left nasal cavity involving nasal septum and roof of choana.

Figure 2: Maggots manually extracted and kept in normal saline. These larvae appear cylindrical, tapering towards both ends, creamy white in color and feed voraciously as its following pupa stage is a non-feeding stage.

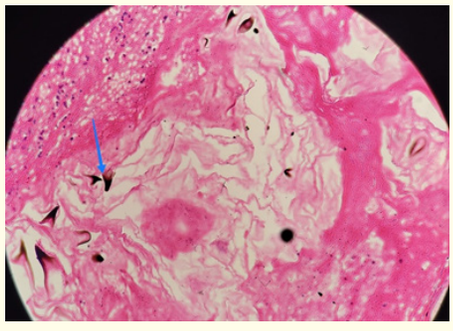

Figure 3: Microphotograph of nasal mucosa debrided, Haematoxylin and Eosin stain at 400x showing fragments of larvae/maggots as pigmented cuticular spines (blue arrow) surrounded by mixed inflammatory infiltrate. Areas of infarction and necrosis are also seen.

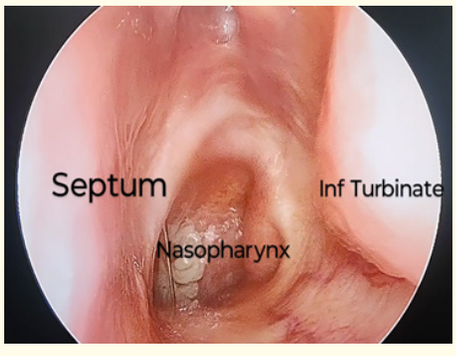

Figure 4: Post-operative DNE after one year showing well healed left nasal cavity.

Conclusion

Nasal myiasis is an exceptionally rare condition especially in immunocompetent adults. Our patient was an immunocompetent individual with no risk factors except the fact that she was a cattle handler. She presented in a very short span of time. However, she was managed successfully with manual extraction of maggots, debridement of involved nasal mucosa and systemic Ivermectin therapy.

Nasal myiasis, being rarely encountered, must be reported so as to create awareness amongst young ORL specialists. This entity has also been reported to affect pediatric population. It continues to be a health emergency especially in developing and underdeveloped nations. Diagnosis is essentially clinical but must always be supplemented by investigations to identify the underlying disease that facilitated the infestation. Prompt and complete endoscopic manual extraction of maggots along with local debridement must be performed immediately. Systemic and/or topical Ivermectin is the drug of choice to ensure complete removal of the pathogen, damage to paranasal sinuses and any complications. This multimodal protocol ensures 100% control rates with no adverse events.

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