



## CASE REPORT

### An uncommon intranasal foreign body

Mahmood Alawainati<sup>1\*</sup>, Hala Radhi<sup>2</sup>, Mahran Kazerooni<sup>2</sup>, Abdulrahman AlAwadhi<sup>3</sup>

<sup>1</sup>Family Medicine, Ministry of health, Manama, Bahrain.

<sup>2</sup>Ear, Nose and throat, Salmaniya Medical Complex, Bahrain.

<sup>3</sup>Pathology, Salmaniya Medical Complex.

**\*Corresponding author:**

Mahmood Alawainati, Family Medicine, Ministry of health, Bahrain; Email: [Mja91@live.com](mailto:Mja91@live.com)

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#### Abstract

Myiasis, an infestation of humans or animals with dipterous maggots, is rarely encountered in developed countries but should be suspected in patients who present with animate nasal foreign bodies. We report the case of an 18-year-old male who presented with bilateral nasal discharge to our tertiary hospital in Bahrain. The diagnosis of nasal myiasis was confirmed by parasitological microscopic assessment and the patient was treated accordingly. Our patient had an excellent prognosis due to prompt diagnosis and treatment. Although the parasitological confirmation of nasal myiasis determines the type of larva, treatment should not be delayed in lieu of parasitological confirmation.

**Key words:** Myiasis, Sarcophaga spp., Larva, Diptera, Nasal discharge

#### Introduction

Myiasis, an infestation of humans or animals with dipterous larvae (maggots), is rarely encountered in developed countries. The Diptera, also known as true flies, are a large order of winged insects that have a reduced hind wing and go through different biological life stages (termed metamorphosis). Although this infection has been known since ancient times, it often poses diagnostic challenges to the treating physicians due to its rarity, unfamiliarity and the different species (members of the order Diptera) that need to be identified in order to plan treatment and preventive measures.

Based on the clinical manifestation and level of parasitism, myiasis is classified into different anatomical and ecological kinds, respectively. Anatomical classification includes cutaneous, wound, intestinal and cavitary types whereas ecological classification comprises obligatory,

facultative and accidental types. Cavitary types, although considered rare in comparison to cutaneous types, tend to have variable clinical presentations depending on the affected cavity, patient factors and type of infecting larva.

Here, we describe a case of nasal myiasis in an 18-year-old male who presented to us with bilateral nasal discharge. The aim of this report is to highlight the importance of early diagnosis and appropriate treatment of this disease.

#### Case presentation

An 18-year-old male, not known to have any chronic medical problems, presented to our tertiary centre with four days history of bilateral nasal discharge. The discharge was mucopurulent, intermittent, foul-smelling and associated with sensation of foreign body in the nasal cavity. He also reported passage of yellow coloured worms from his

nostrils. The patient had no other symptoms such as fever, epistaxis, foreign body insertion, earache, vomiting and/or neurological complaints. Past surgical history was positive for uncomplicated appendectomy four months prior to his presentation. There was no history of smoking, alcohol abuse, recent travel or contact with people who had similar symptoms.

On examination, he was afebrile with stable vitals. Mild bilateral facial tenderness was noted, more on the left maxillary side, with purulent bilateral nasal discharge.

Diagnostic nasal endoscopy revealed erythematous nasal mucosa bilaterally. Macroscopic examination of the foreign body showed a segmented cylindrical pale yellow larva, that was 2 cm in length and 5 mm in width (Figure 1). Posterior spiracles, each plate consisting of three vertically elongated straight slits, were identified under light microscope (Figure 2). These spiracles were located near each other with incomplete peritreme.



**Figure 1:** A macroscopic picture of the Sarcophaga larva is shown in a white sheet



**Figure 2:** Posterior spiracles of third stage larvae (Sarcophaga sp) under light microscope. Three spiracles (star) and incomplete peritreme (white arrow)

The microscopic characteristics of anterior part (Figure 3), posterior part and spiracles confirmed

the diagnosis of Sarcophaga spp (flesh flies). Brain and paranasal Computed Tomography (CT) imaging was performed, to detect possible inflammation or any other associated complications, and revealed mucosal thickening of the left maxillary sinus and air bubbles (Figure 4).



**Figure 3:** A microscopic picture of the anterior end of the Larva

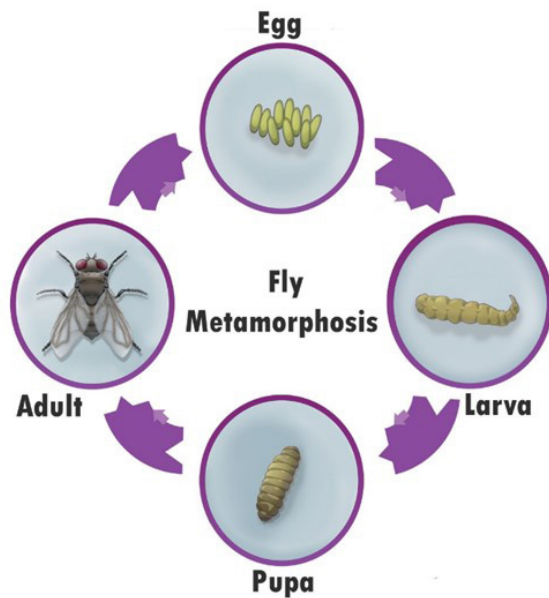


**Figure 4:** Axial paranasal sinus computed tomographic cross section. Mucosal thickening of the left maxillary sinus with air bubbles.

Manual removal of the larva was performed and an anthelmintic drug (Ivermectin) was prescribed for one week. The patient was re-evaluated after two weeks when he reported improvement of his symptoms. His physical examination at the time revealed only minimal tenderness on the affected side and no inflammatory signs under fiberoptic examination. The anthelmintic medication was prescribed due to the presence of air bubbles in the CT scan, which were interpreted as remnants of larva that could not be evacuated and managed by simple removal.

## Discussion

Larval infestation of the nasal cavity, also known as nasal myiasis, is associated with advanced age, immunodeficiency, underlying nasal pathology and poor socioeconomic status.<sup>4</sup> The life cycle of flies, starting from the developing larvae, consists of the four stages of complete metamorphosis: egg, larva, pupa and adult flies (Figure 5). The clinical manifestations of this disease are caused by the larval stage of the cycle.<sup>5</sup>



**Figure 5:** The life cycle of flies

Transmission occurs either through direct inhalation of larva or deposition of eggs by flies in the affected cavities. As a result, most signs and symptoms such as rhinorrhoea, foreign-body sensation and facial pain are related to the mechanical presence of the larva.<sup>6</sup> Additional symptoms e.g.: halitosis may be related to toxins secreted by larva.<sup>7</sup> Possible complications include secondary bacterial infection, local destruction, orbital involvement and penetration of intracranial organs. Similar cases were found in the literature; however, to the best of our knowledge less than ten cases reported the *Sarcophaga* as the causative agent.<sup>8</sup>

To maintain their morphology and length, larvae should be placed in a solution of 70 percent alcohol. In addition, obtained specimens should be examined microscopically and macroscopically to identify characteristic features of the body surface, cephalopharyngeal skeleton, anterior and posterior spiracles.<sup>9</sup> Molecular methods may be used to identify and confirm the species.<sup>10</sup> Identifying the

type of larva is important for public health, in order to trace the flies, understand the mode of infestation, predict the prognosis (as some types carry a worse prognosis) and plan the treatment.<sup>3</sup>

The management of nasal myiasis is variable. However, manual or endoscopic removal of larva in order to control symptoms is necessary and should not be delayed in favour of confirming the specific species. In addition, medical and/or surgical approaches may be warranted, particularly in the presence of deep-seated infections, destructive sequelae, extranasal or neurological manifestations.<sup>11</sup>

Interestingly, spontaneous extrusion of these organisms has been reported in the literature.<sup>12</sup> Of note, although medical treatment with Ivermectin has not been approved by US Food and Drug Administration (FDA) for treatment in nasal myiasis, numerous case reports have documented successful outcome with this drug. Furthermore, Ivermectin decreases the risk of complications and remains a therapeutic option that can be used<sup>4</sup>, especially in patients with deep-seated involvement, neurological complications and in cases where local treatments fail to control the disease.<sup>13, 14</sup>

Good personal hygiene practices, rinsing foods and proper dumpster management are simple and effective preventive measures. Other methods such as adequate sanitation, field management, mosquito nets and repellents can decrease the incidence of emerging cases especially in endemic areas.<sup>4,5</sup>

Suggested approach to treat patients with myiasis involves manual removal of the maggots, topical medications if needed, administration of systemic agents (particularly in presence of local or systemic complications) and follow-up as appropriate. Early management may lower the recurrence rate and improve prognosis. The overall prognosis is excellent for uncomplicated cavitory and cutaneous types.<sup>15</sup>

## Conclusion

Nasal myiasis is rarely encountered in Ear, Nose and Throat (ENT) clinics. Nonetheless, it should be considered in the differential diagnosis, particularly when a nasal foreign body is suspected. Early diagnosis and treatment are essential to avoid local



and systemic complications. For uncomplicated cases, conventional methods including observation and manual removal are the mainstay of treatment and may be sufficient to control the disease. Moreover, the effectiveness of Ivermectin in human myiasis should be evaluated to determine the exact indications and cost-effectiveness of this treatment.

### Authors' contributions

MA and HR have made substantial contributions to conception and design, acquisition of data, have been involved in drafting the manuscript and revising it critically for important intellectual content; and have given final approval of the version to be published. MK and AA have been involved in revising the manuscript critically for important intellectual content and have given final approval of the version to be published.

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### Availability of data and materials

Data sharing is not applicable to this article as no datasets were generated or analysed during the current study.

### Ethical approval and consent to participate

Written informed consent was obtained from the patient for publication of this case report and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

### Competing interests

The authors declare that they have no competing interests.

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