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Case Report

Nosocomial nasal myiasis in an intubated patient

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Abstract

We report a case of nasal myiasis caused by *Sarcophaga* spp., noted during hospitalization. A 74-year-old man was admitted with non-ST-elevation myocardial infarction. The patient underwent coronary arterial bypass surgery and was then mechanically ventilated by means of a nasotracheal tube for the next 8 days. After extubation, a total of seven maggots were retrieved from both nostrils. The larvae were removed and reared to mature flies, which were identified as *Sarcophaga peregrina*. From the clinical course and the fly's life cycle, it was concluded that the infestation was hospital-acquired.

Keywords: Myiasis; Nosocomial infection; *Sarcophaga*

1. Introduction

Myiasis occurs when tissues, organs, and body cavities of humans or animals are invaded and infested by the larval stage of nonbiting flies of the order Diptera.[1] The fly larvae that cause myiasis can live as parasites in the skin, soft tissues, mouth, stomach, intestines, urogenital system, nose, ears, and eyes.[2] In the general community, naso-pharyngeal sites are classic but seem to be much rarer than infestations of skin wounds.[3] Nasal myiasis is far more prevalent in tropical and developing countries.[4] Here we report on a case of nasal myiasis originating in a hospital.

2. Case report

A 74-year-old man was admitted to the cardiovascular department on July 30, 2004 owing to non-ST-elevation myocardial infarction. The patient had a history of coronary arterial diseases, Type 2 diabetes mellitus, and hypertension. On admission, the patient was in a clear state of consciousness. Since triple-vessel disease was diagnosed by means of cardiac catheter examination, coronary arterial bypass surgery was performed 11 days after admission. A nasal endotracheal tube was inserted by means of fibroscopic guide instead of an oral endotracheal tube because of difficult intubation. The nasotracheal tube was placed through the right nostril, whereas a nasogastric tube was placed through the left nostril.

After the operation, the patient was mechanically ventilated and remained in the cardiovascular surgical intensive care unit. Seven days after the operation, the patient was transferred to the respiratory care unit and successfully weaned from mechanical ventilation on the second day. However, a total of seven maggots were noted in both nostrils after extubation. Nasal endoscopy revealed slight inflammation of the nasal mucosa, but no additional maggots were observed. Computed tomography (CT) of the sinuses showed clear paranasal sinuses and no evidence of tissue destruction. Subsequently, the patient had an uneventful recovery. Five years after

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hospitalization, the patient was free of symptoms attributable to myiasis. Environmental sanitation was reinforced in the hospital. To date, no additional cases of myiasis have been identified in this hospital.

The larvae (Fig. 1A) were preserved in a nutrient-rich environment to complete their life cycle. First, they transformed to pupae (Fig. 1B) and then completed their metamorphosis by transforming into adult flies (Fig. 1C). The flies were identified as *Sarcophaga peregrina* (Robineau-Desvoidy, 1830).

3. Discussion

Of the order Diptera, the most common families responsible for myiasis are the *Oestridae* (bot flies), *Calliphoridae* (screwworm flies, blowflies), and *Sarcophagidae* (carrion flies), the family of flies identified in the present case.[5] The *Sarcophaga* species within the family *Sarcophagidae* are large, gray, and scavenging flies that are found distributed worldwide. Females are larviparous; that is, they deposit first-instar larvae instead of laying eggs. Larvae are deposited in batches of 40–60 on decaying carcasses, rotting food, human and animal excreta, and sometimes in wounds.[1] There are three instars of larval maturation, and complete development takes only 3–6 days.[6] Given the length of time of the patient's hospitalization and the developmental stage of the larvae found, it is considered that the infestation was hospital-acquired. Hospital-acquired nasal myiasis caused by *Sarcophaga* sp. has been previously reported only in Turkey.[7]

Nasal myiasis in the community setting is seen more often in tropical and developing countries and is commonly seen in patients who have atrophic rhinitis and patients of poor socioeconomic status and/or living under poor hygienic conditions.[8] Nosocomial nasal myiasis, however, has been reported in midsummer in developed countries and is predisposed by immobility, debilitation, and/or a comatose status.[6,9–13] Reviewing the literature regarding nosocomial nasal myiasis, the use of nasotracheal tubes has only been mentioned for one patient for whom maggots were noticed around the tube with visibly purulent drainage.[9] The present case differs in which maggots were noted in both nostrils after removal of the nasotracheal tube. Interestingly, our patient acquired the parasites in his nose while both nostrils were occupied.

In a review of 252 cases of nasal myiasis in India, it was observed that the most common complications were septal and palatal perforations, followed by erosion of the nasal bridge, adjacent areas of face, and the orbit as well as facial cellulites and ulceration of the tonsils and posterior pharyngeal wall.[14] Nevertheless, in our patient, as well as other cases reported[9,11,12], there was no evidence of tissue destruction or invasion resulting from nasal myiasis. The differences between the various species of fly larvae as they relate to their ability to invade tissue and restrictions on host selection may influence the clinical outcome. The larval stages of some fly species have been shown to be exceptionally aggressive. For instance, the larvae of *Cochliomyia hominovirax* invade live tissues and may destroy the nasal pyramid[3] and penetrate the

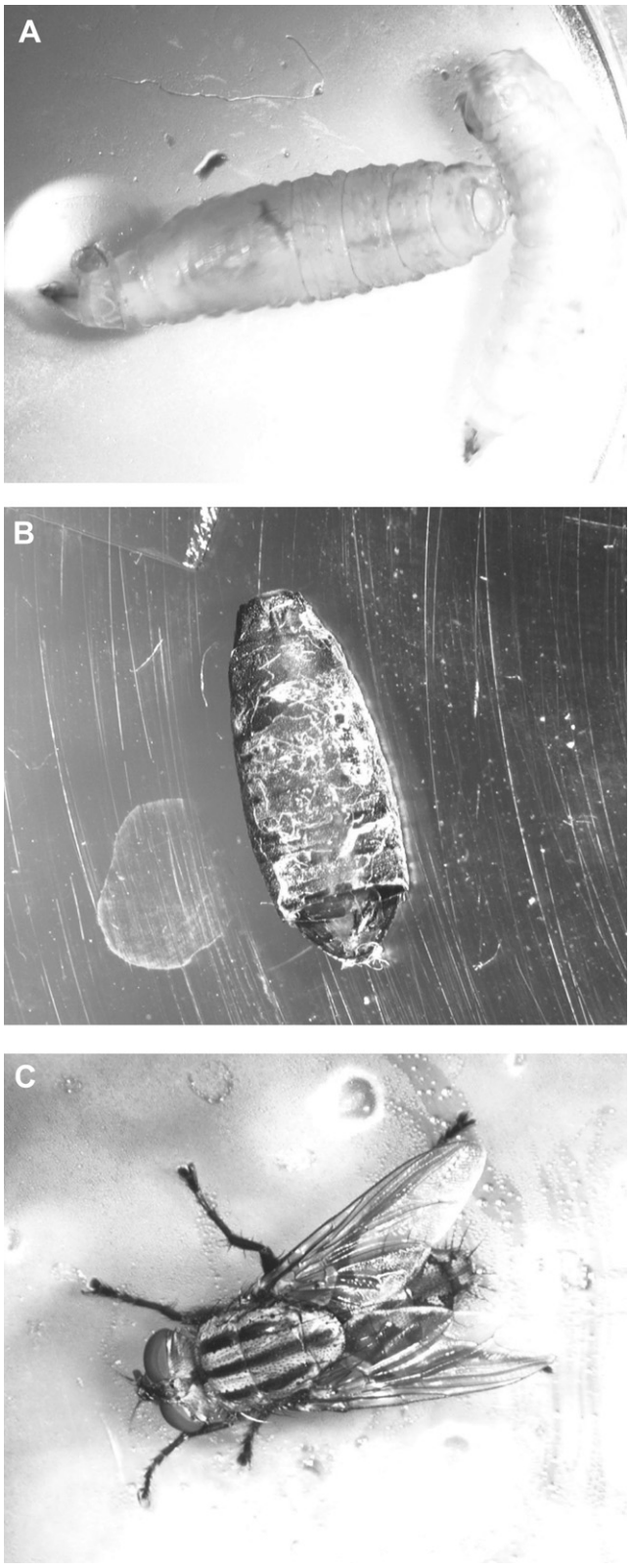

Fig. 1. Life cycle of *Sarcophaga peregrina*. (A) *S peregrina* larvae removed from the patient. Actual size: 12 mm. (B) *S peregrina* pupa. Incubation: Day 6. Actual size: 10 mm. (C) *S peregrina* adult. Incubation: Day 16. Actual size: 11 mm.

sinuses and cribiform plate to reach brain.[15] Because of the differences between species, species identification is essential to help clinicians to predict the patient's outcome. Furthermore, a CT scan may be used to determine whether inflammation or other changes are present in the paranasal sinuses and to evaluate the extent of bony destruction and tissue invasion.

In conclusion, although rare, nasal myiasis can occur in a hospital setting and *Sarcophaga* spp. could be the etiologic agent. Fly species identification is warranted, and a CT scan may be useful to evaluate the extent of bony destruction and tissue invasion. Prevention of nosocomial nasal myiasis could require controlling fly populations in the hospital environment by sanitary and efficient waste disposal, reducing odors of decomposition, and more radical approaches such as insecticide sprays. Other prevention measures include protection of patients at risk by physical barriers such as screens or sealed windows, and attention to the hygiene of the patients.

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