

Obligate Myiasis: A Case Series From Nepal

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Citation

Atreya A, Nepal S, Bhattarai A, Kanchan T. Obligate Myiasis: A Case Series From Nepal. *Kathmandu Univ Med J.* 2018;63(3):269-71.

INTRODUCTION

Maggots have fascinated medical researchers throughout the globe. In forensic practice, maggots are synonymous to decomposition. Calculation of post mortem interval derived from the life cycle of insect by Forensic entomologists is in practice universally. In clinical medicine, "maggot therapy" is done for wound debridement.^{1,2} This therapy is based upon the propensity of maggots to feed on necrosed tissue. Although maggots are unanonymously linked to carcass or dead tissues, there are reports of its infestation into living tissues as well. Etymologically the Latin term Myiasis (Muia = fly, iasis = disease), coined by Hope in 1840; denotes maggot infestation in living tissues.³ There are two forms of myiasis namely obligate and facultative. Obligate myiasis denotes maggots feeding on living tissue whereas facultative myiasis represents the opportunistic behaviour of the fly taking advantage of wound or necrotic tissue, laying by eggs which hatch into maggots. We present cases of obligate myiasis for their uniqueness and rarity. All the

ABSTRACT

Although maggots are unanonymously linked to carcass or dead tissues, there are reports of its infestation into living tissues as well. Myiasis denotes maggot infestation in living tissue. There are two forms of myiasis namely obligate and facultative. Obligate myiasis denotes maggots feeding on living tissue whereas facultative myiasis represents the opportunistic behaviour of the fly taking advantage of wound or necrotic tissue, laying by eggs which hatch into maggots. Decreased physical activity and poor hygiene leads to maggot infestation. Maggot invasion of living tissues is undesirable occurrence which can best be avoided by improving hygiene. People with low living standards in the developing nations are the occasional victims for maggot infestations. We present cases of obligate myiasis for their uniqueness and rarity.

KEY WORDS

Hygiene, Maggots, Myiasis

cases presented here had attended Emergency Department of Manipal Teaching Hospital, Pokhara between the years 2013 and 2015.

CASE SERIES

Case 1: A young female of 23 years diagnosed with myasthenia gravis for past 3 years, complained of difficulty in breathing with sensation of something sticking to her throat one morning. She then became severely dyspnoeic and was rushed immediately to the nearby hospital where she was intubated. Later on she was referred to Manipal Teaching Hospital. On reaching the emergency department in the late evening, she had GCS of E₃M₅V_{ET} and her pupils were bilaterally equal and reactive. The patient had a history of fever prior to the incident which was not documented in the referral sheet. On presentation she had Blood pressure of 120/80 mm of Hg, pulse rate

of 100 beats/min, respiratory rate of 22 per min and temperature 98.8 F. There was ptosis of both the eyes, frothing from mouth and spontaneous defecation and micturation. On auscultation of the chest vesicular breath sound was heard with equal air entry and crepitations on both lung bases. Auscultation of the precordium did not reveal murmurs. The provisional diagnosis made in the Emergency room was *Generalized Myasthenia Gravis presented in Myasthenia Crisis precipitated by infection*. The patient was catheterized with Foley's catheter, suction done in around oral and nasal cavities, nasogastric tube inserted and then shifted to Intensive Care Unit. On arrival to ICU a live maggot was seen crawling out from the gap of partially open mouth (fig. 1a). Opening of the oral cavity under bright light revealed swarms of maggots trying to make their way out which were previously absent when seen in the ER during the suction (fig. 1b).



Figure 1a Maggot crawling out of partially open mouth **Figure 1b** Maggots removed from oral cavity

Case II: An elderly female on her early sixties came to the hospital with a complaint of abdominal pain around the umbilicus. The doctor on duty requested the lady to pull down the petticoat and the saree so as to reveal the entire abdomen. A peculiar foul smell emitted when the cloths were pulled down. There were three superficial punctuate wounds around the umbilicus one of which was showing a pearly white thing coming out. When pulled by a forceps it was a maggot about 0.5 cm in length. On lightly squeezing of the umbilicus one more maggot crawled out through the opening. Superficial skin incision was given by forceps under local anaesthesia around the umbilicus. On reflecting the skin it was observed that the maggots had burrowed the skin. The maggots were carefully picked by the forceps and collected in hydrogen peroxide (fig. 2). Although the foul smell was emitting out the skin underneath the incision was healthy. The maggots were burrowed deep under the skin but were confined to abdominal muscles. On inquiry of the patient about her living conditions, it was known that she was a single woman residing in rural village. Her only son had gone to Malaysia as a labourer to earn some livelihood.

Case III: A 62 year old man was brought to hospital by his daughter who became anxious after finding excavated injury on the sole of right foot of her father infested with maggot (fig. 3). As per patient's history he accidentally stumbled on firewood and lacerated his foot while walking 10 days back. The patient thought it was a small injury



Figure 2 Maggots collected in a bowl containing hydrogen peroxide.



Figure 3 Swarms of maggots seen in excavated wound on the sole of right foot.

which would heal on itself. He narrated a similar history of trauma at the same site 10 years back while he was crossing a river stream barefooted which completely healed on itself. But this time after 7 days of injury he noticed pus coming out from the wound. He used some damp cloth to clean the pus. He was reluctant to seek medical attention as he thought it would heal on itself and it would cost him much if he visited hospital.

DISCUSSION

Intestinal myiasis can occur as a result of ingestion of contaminated foods. Resilient cuticles around the body act as armour for the maggots against digestive enzymes.⁴ The patient in the first case was suffering from myasthenia gravis. She was not much physically active as her physical activities made her dyspnoeic and exacerbate. Patients with paralysis, immobility, injury or debilitating illness are easy targets of flies to lay their eggs.³⁻⁶ The maggots in that case were about a centimetre in length. Maggots of that size require at least a week to develop. Decreased physical activity leads to poor hygiene. This might be the reason the young patient was infested with maggots. The poor hygienic conditions and moist environment around the nasal and oral openings might have favoured the flies to lay down the eggs which hatched into larva. These larvae crawled deep inside the body making their way into gastrointestinal tract. Patients with Myasthenia gravis have poor oropharyngeal muscle function leading to aspiration of foods into respiratory tract. This aspiration of food may lead to aspiration pneumonia as the ability to cough effectively is lost. This could be explained by the initial complaint made by the patient of difficulty breathing and something sticking to the throat, fever (infection) and basal crepitations.

The elderly female in the second case was living with harsh living standards. Poverty, rural geography and no one to care for in her advancing age were the likely factors for cutaneous myiasis. The elderly male in the third case was a farmer of low socio-economic strata. People with low living standards in the developing nations are the occasional victims for maggot infestations.⁷ Cutaneous myiasis due to infestation from *Hypoderma lineatum* was reported in a traveller returning from Nepal.⁸ Lack of

Forensic Entomologist in the region made it impossible to identify the insect species in the present cases. There are reported cases of vulvar myiasis, orbital myiasis, myiasis in modified radical mastoidectomy cavity and genital myiasis from Nepal.⁹⁻¹²

Maggot invasion of living tissues is undesirable occurrence which can best be avoided by improving hygiene. The detection of foul smell during the initial stages may give a clue of maggot infestation. Detection of maggots by caregivers at home may be a horrific experience and may decrease the standard of care to the patient. Shock and

fear of retribution for neglected care from caregivers might make the patient more vulnerable of systemic spread.

Young doctors are to be educated that maggots can infest into living tissues too. Although literatures suggest oral and nasal cavities to be the common place for maggot infestation, systemic invasion of maggots cannot be denied as in our case. Treatment of maggots is simple, as it requires only a pair of gloved hands holding a forceps in majority of the cases on the other hand systemic myiasis warrants careful attention and sophisticated approach else may prove fatal.

REFERENCES

1. Sherman RA, Pechter EA. Maggot therapy: a review of the therapeutic application of fly larvae in human medicine, especially in treating osteomyelitis. *Med Vet Entomol.* 1998;2:225-30.
2. Evans P. Larvae therapy and venous leg ulcers: reducing the 'yuk factor'. *J Wound Care.* 2002;11:407-8.
3. Sharma A. Oral myiasis is a potential risk in patients with special health care needs. *J Glob Infect Dis.* 2012; 4:60-1.
4. Burgess IF. Myiasis: maggot infestation. *Nurs Times.* 2003; 99:51-3.
5. Jang M, Ryu SM, Kwon SC, Hao JO, Kim YH, Kim DH et al. A Case of Oral Myiasis caused by *Lucilia sericata* (Diptera: Calliphoridae) in Korea. *Korean J Parasitol.* 2013; 51: 119-23.
6. Sharma A, Hegde AM. Primary oral myiasis due to *Chrysomya bezziana* treated with Ivermectin. A case report. *J Clin Pediatr Dent.* 2010; 34:259-62.
7. Caissie R, Beaulieu F, Giroux M, Berthod F, Landry PE. Cutaneous Myiasis: Diagnosis, Treatment, and Prevention. *J Oral Maxillofac Surg.* 2008;66:560-8.
8. Jelinek T, Nothdurft HD, Rieder N, Löscher T. Cutaneous myiasis: review of 13 cases in travelers returning from tropical countries. *Int J Dermatol.* 1995;34:624-6.
9. Dawadi BR, Sherpa MT, Shrestha R. A Case of Vulvar Myiasis. *JNMA J Nepal Med Assoc.* 2015;53:288-90.
10. Pandey TR, Shrestha GB, Sitaula RK, Shah DN. A Case of Orbital Myiasis in Recurrent Eyelid Basal Cell Carcinoma Invasive into the Orbit. *Case Rep Ophthalmol Med.* 2016;2016:2904346.
11. Adhikari P, Sinha BK, Bhattarai H, Shrivastav RP. Myiasis infestation in postoperative mastoid cavity. *Nepal Med Coll J.* 2007;9:284-5.
12. Shrestha D, Bista KD, Singh M, Ojha N, Rajbhandari S. Human genital myiasis in extremes of age. *J Nepal Health Res Counc.* 2014;12: 138-40.