

## Cutaneous Myiasis Caused by *Cordylobia anthropophaga*: Case Report of an UN Peacekeepers in Central Africa

<sup>1</sup>Syed Abdul Hasan Md Abdullah, <sup>2</sup>Munshi Shariful Islam and <sup>2</sup>Nazrul Islam  
<sup>1</sup>Directorate General of Medical Services (DGMS), Bangladesh Armed Forces,  
Dhaka, Bangladesh  
<sup>2</sup>Bangladesh UN Hospital, Bouar, Central African Republic

---

**Abstract:** Cutaneous myiasis caused by *Cordylobia anthropophaga*, the tumbu fly, involves the infestation of human tissue with fly larvae and is common in tropical Africa. We report a case of a 39 year old Bangladeshi United Nations peacekeeper with cutaneous myiasis who deployed temporarily in Central Africa. The epidemiology, clinical presentation and various methods of larval extraction, treatment and prevention on public health aspect are discussed.

**Key words:** Cutaneous myiasis, *Cordylobia anthropophaga*, tumbu fly, larvae, deployed, public health

---

### INTRODUCTION

Myiasis from the Greek myia for “fly” has been defined as the infestation of live human or vertebrate animals with larvae of the insect order *Diptera* (flies) which feed on living or necrotic tissue (Hall and Smith, 1993; James, 1947; Hall and Wall, 1995). Myiasis can be accidental as when fly larvae occasionally find their way into the human body or facultative when fly larvae enter living tissue opportunistically after feeding on decaying tissue in neglected wounds (Sherman, 2000). Myiasis can also be classified according to the site of infestation. Cutaneous myiasis involves the invasion of the skin with the most common target being a wound, near which an obligatory or facultative parasitic fly will lay eggs (Hall and Smith, 1993; James, 1947; Sherman, 2000). In “wound myiasis”, both healthy and necrotic tissues can be fed on by the larvae, depending on the conditions and species of fly involved. Flies (e.g., the human botfly *Dermatobia hominis* in tropical America, the “tumbu fly” *Cordylobia anthropophaga* in tropical Africa and Wohlfahrtia vigil in North America) penetrate healthy skin and produce itchy sores that develop into painful boil-like lesions or furuncles, hence the term “furuncular myiasis” (Hall and Smith, 1993; Dalton and Haldane, 1990; Boggild *et al.*, 2002). Creeping myiasis is a type of cutaneous myiasis involving the migration of fly larvae underneath the skin (Hall and Smith, 1993; Ahmet and Krafchik, 2004). Apart from the skin, the eyes, ears, nose and sinuses represent relatively common sites of attack whereas less common sites are the mouth, throat, urogenital and gastrointestinal tracts (Hall and Smith,

1993; James, 1947; Sherman, 2000; Felices and Ogbureke, 1996). Myiasis is usually among the five most common dermatologic conditions, representing 7.3-11% of cases in endemic area (Lukin, 1989) and it represent the fourth most common travel-associated skin disease (Caumes *et al.*, 1995). As the modern, rapid international travel increases these myiatic infestations are now encountered outside these endemic regions. The presenting paper is the case report of a cutaneous myiasis caused by the “tumbu fly” *Cordylobia anthropophaga*.

The eggs of *Cordylobia* species are deposited on the soil or wet and soiled clothes hung outside for drying. The hatched larvae invade unexposed skin (of the buttocks, trunk, the limbs and penis) in contact with the wet clothes. Mature larvae then emerge from the host and pupate in the soil (Hall and Wall, 1995). Myiasis occurs mainly in tropical and subtropical latitudes and the main contributing factors are probably the higher levels of exposure to myiasis causing flies due to poorer clothing and hygiene conditions, combined with the increased aggressiveness of myiasis-causing flies in the tropics (Hall and Smith, 1993; Hall and Wall, 1993; Lukin, 1989). Nevertheless, many cases acquired in temperate parts of Eurasia and North America, including Canada have been described in the literature (Hall and Wall, 1995; Sherman, 2000; Caumes *et al.*, 1995; Gyorkos, 1977). For the temporary employer/visitor in endemic area this disease is very unknown to them as well as human myiasis remains an unfamiliar illness for most physicians of South Asia deployed in UN peacekeeping mission in Africa;



Fig. 1: Furuncular swelling



Fig. 3: Wound immediately after larvae extraction



Fig. 2: Views of larva immediately after extraction



Fig. 4: After 5 days of larvae extraction

misdiagnosis and inappropriate treatment are common (Sherman, 2000). Awareness of myiasis by health professionals would facilitate recognition and augment the effectiveness and expediency of care.

#### MATERIALS AND MEHODS

**Case report:** A 39 years old male soldier in July 2016, presented with multiple small swellings over right forearm, left hand and left thigh associated with stinging sensation for 5 days. The very patient was the Bangladeshi UN peacekeeper deployed in Central African Republic. He came to this country 6 months back and he never been in this region earlier. All the lesions were very pruritic and the patient believed them to be mosquito bites. The patient said that the lesions continued to grow and eventually began to have area of redness without any exudates. In the days just prior to presentation, the patient said that the lesions became very painful and described the pain was sharp and like “hot needles” going in and out of beneath his skin wound.

Patient was in a distant remote camp and treated by antibiotic and antihistamine. For this complain he evacuated to Bangladesh UN hospital in Bouar, Central African Republic. In the hospital, on examination patient was anxious and afebrile and no lymphadenopathy found. Total six tender furuncular swellings was observed over

anterior side of forearm at the junction of 4th and little finger of left hand and over front of the left thigh with surrounding erythema and central pore (Fig. 1). The average size of the swellings was 1.5×1.5 cm. Live motile larvae, one from each lesion were extruded when the swelling was squeezed. Out of six only one lesion needed small elliptical incision and single larva was expelled from the wound (Fig. 2 and 3). All the larvae were more or less 1 cm in length. The wound was cleaned with mild antiseptic and bandaged, given analgesia and the patient was observed more 5 days in the hospital. Patient was asked to report to hospital after 2 weeks (Fig. 4) On his follow up, all the wounds healed without complication and there was a residual fading skin pigmentation. The live larva was sent to an Entomologist and an expert infectious disease consultant, both of them identified that all were maggot of the Tumbu fly, *Cordylobia anthropophaga*.

#### RESULTS AND DISCUSSION

Three reasons lead us to believe that the parasite involved in the reported case was *Cordylobia anthropophaga*. First, the sore had the form of a furuncle and there was no sign of any wound or necrotic tissue that could have attracted flies before the invasion by the maggot; second, the patient was not a resident of tropical Africa and he came there only 6 months back and having

a typical symptoms of cutaneous myiasis. Thus, the causal agent was most likely an obligatory parasite associated with furuncular myiasis in temperate Africa. Finally, the shape of the larva, pictured after extraction (Fig. 2), excludes all remaining candidates except *Cordylobia*.

The first description of myiasis was by Hope (1840). The disease is usually uncomplicated and self limiting but there have been reported cases of fatal cerebral myiasis in young children resulting in meningitis and death (Hope, 1840). Clinically, infections with myiatic flies start out as itchy sores that develop into painful boil-like lesions with a central punctum which often ooze.

An intense inflammatory reaction may be seen in the surrounding tissue during a later stage of the infestation (Ockenhouse *et al.*, 1990). Secondary infection by bacteria is uncommon because bacteriostatic activity in the gut of the larva seems to prevent undesirable overgrowth of pyogenic bacteria (MacNamara and Durham, 1997). Symptoms may include mild pruritus, periodic stinging or intense cutaneous pain. In the presenting case all classical symptoms were there except any exudation.

Due to their infrequent occurrence, these lesions are often misdiagnosed as cellulitis, leishmaniasis, furunculosis, staphylococcal boil, insect bite or sebaceous cyst (James, 1947). The diagnosis is mainly clinical and should be suspected in a patient with a non-healing furuncular skin lesion. Ultrasound has been used to aid in diagnosing. Definitive diagnosis is made with demonstration and identification of the larva based on typical morphology.

For furuncular cutaneous myiasis, digital pressure on both sides of the lesion (or using a pair of wooden spatulas (Olumide, 1994) is often sufficient to expulse the larva(e). Pressure can be reinforced with gentle traction with forceps or tweezers. If this method is not satisfactory petroleum jelly, paraffin oil or bees wax can be applied to the opening of the lesion to asphyxiate the larvae and force it out it may take 24 h for the larva to come out (Boggild *et al.*, 2002). Surgical excision may be used if the larva is dead or if other methods have failed. To facilitate excision, the larva may be numbed by application of lidocaine gel (Ashenhurst and Pietucha, 2004). In presenting case five larvae came out by squeezing and one needed incision. In any case, care should be taken not to rupture the maggots because they may cause secondary infections or trigger potentially severe allergic reactions. The presence of additional maggots in the lesion should be considered (especially, in wound myiasis). Antibiotics should be prescribed for signs of bacterial infection (Sherman, 2000). Complications of cutaneous myiasis include cellulitis, abscess formation, tetanus and osteomyelitis (Ugwu and Nwadiaro, 1999).

On public health aspect, this disease can mostly negotiable by taking adequate preventive measure. The female flies of *Cordylobia anthropophaga* lay eggs in shaded ground, especially, sand or on clothing, favouring the subsequent invasion of skin by hatched larvae avoiding laying on the ground for long, ensuring that no clothes are left outside (especially, not in the shade) or ironing clothes when left outdoors to kill eggs or larvae may help reduce the risk of myiasis in areas where *C. anthropophaga* is endemic (Caissie *et al.*, 2008). Also improvement of sanitation, personal hygiene and exterminating the flies by insecticides are crucial in controlling the disease (Musa and Allah, 2008). Fly breeding habitats should also be reduced by managing food residues and garbage containers properly (Caissie *et al.*, 2008).

## CONCLUSION

Human cases of cutaneous myiasis are most probably underreported because many remain undiagnosed or unpublished. Awareness of myiatic infestation by health professionals would assist animal resources, agriculture and other departments in monitoring the different species of myiatic fly in the region (Musa and Allah, 2008).

The present observations confirm that larvae of tambu fly infestation is present in Central African Region. Every year United Nations peacekeepers of different countries of the world are coming in this region. Many of them are never experienced this cutaneous infection. We want to emphasise that they should be well aware of this parasitic disease and take adequate preventive measures.

## ACKNOWLEDGEMENT

We thank to all doctors, nurses and paramedics of Bangladesh UN Level 1+Hospital, MINUSCA, Bouar, Central African Republic.

## REFERENCES

- Ahmet, A.H. and B.R. Krafchik, 2004. The unidentified parasite: A probable case of North American cuterebrid myiasis in a pediatric patient. *Pediatr. Dermatol.*, 21: 515-516.
- Ashenhurst, M. and S. Pietucha, 2004. Management of ophthalmomyiasis externs: Case report. *Can. J. Ophthalmol.*, 39: 285-287.
- Boggild, A.K., J.S. Keystone and K.C. Kain, 2002. Furuncular myiasis: A simple and rapid method for extraction of intact *Dermatobia hominis*. *Clin. Infect. Dis.*, 35: 336-338.

- Caissie, R., F. Beaulieu, M. Giroux, F. Berthod and P.E. Landry, 2008. Cutaneous myiasis: Diagnosis, treatment and prevention. *J. Oral Maxillofacial Surg.*, 66: 560-568.
- Caumes, E., J. Carriere, G. Guermonprez, F. Bricaire and M. Danis *et al.*, 1995. Dermatoses associated with travel to tropical countries: A prospective study of the diagnosis and management of 269 patients presenting to a tropical disease unit. *Clin. Infect. Dis.*, 20: 542-548.
- Dalton, M.T. and D.J. Haldane, 1990. Unusual dermal arthropod infestations. *Can. Med. Assoc. J.*, 143: 113-114.
- Felices, R.R. and K.U. Ogbureke, 1996. Oral myiasis: Report of case and review of management. *J. Oral Maxillofacial Surg.*, 54: 219-220.
- Gyorkos, T., 1977. A review of human myiasis in Canada. *Can. Dis. Wkly. Rep.*, 3: 101-104.
- Hall, M. and R. Wall, 1995. Myiasis of humans and domestic animals. *Adv. Parasitol.*, 35: 257-334.
- Hall, M.J.R. and K.G.V. Smith, 1993. Diptera Causing Myiasis in Man. In: *Medical Insects and Arachnids*, Lane, R.P. and R.W. Crosskey (Eds.). Chapman and Hall, London, pp: 429-469.
- Hope, F.W., 1840. On insects and their larvae occasionally found in the human body. *Trans. Entomol. Soc. London*, 2: 256-271.
- James, M.T., 1947. *The Flies That Cause Myiasis in Man*. U.S. Department of Agriculture, Washington DC., USA., Pages: 175.
- Lukin, L.G., 1989. Human cutaneous myiasis in Brisbane: A prospective study. *Med. J. Aust.*, 150: 237-240.
- MacNamara, A. and S. Durham, 1997. *Dermatobia hominis* in the accident and emergency department: I've got you under my skin. *Emergency Med. J.*, 14: 179-180.
- Musa, H.A. and E.M.W. Allah, 2008. Cutaneous myiasis caused by *Cordylobia anthropophaga*: Description of a case from Gazira State-Sudan. *Sudanese J. Public Health*, 3: 91-93.
- Ockenhouse, C.F., C.P. Samlaska, P.M. Benson, L.W. Roberts and A. Eliasson *et al.*, 1990. Cutaneous myiasis caused by the African tumbu fly (*Cordylobia anthropophaga*). *Arch. Dermatol.*, 126: 199-202.
- Olumide, Y.M., 1994. Cutaneous myiasis: A simple and effective technique for extraction of *Dermatobia hominis* larvae. *Intl. J. Dermatol.*, 33: 148-149.
- Sherman, R.A., 2000. Wound myiasis in urban and suburban United States. *Arch. Int. Med.*, 160: 2004-2014.
- Ugwu, B.T. and P.O. Nwadiaro, 1999. *Cordylobia anthropophaga* mastitis mimicking breast cancer: Case report. *East Afr. Med. J.*, 76: 115-116.