Dermal myiasis caused by the flesh fly, Parasarcophaga (Liosarcophaga) dux (Thomson, 1869) (Diptera: Sarcophagidae) at the site of a malignant melanoma: a case report

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Abstract. Dermal myiasis due to the flesh fly has not been commonly reported in Thailand. A 64-year-old man came to the hospital with a 6-month history of a black tumor on the dorsum of the right great toe. The tumor was biopsied and determined to be a malignant melanoma. Second instar larvae were also seen in the wound and one larva was reared until the adult stage wherein it was identified as the flesh fly, Parasarcophaga (Liosarcophaga) dux (Thomson, 1869) (Diptera: Sarcophagidae). This case shows myiasis due to synanthropic sarcophagid flies occurs in Thailand and can occur in a malignant melanoma.

Keywords: Parasarcophaga dux, myiasis, melanoma, Thailand

Introduction

Flesh flies (Diptera: Sarcophagidae) are of medical importance worldwide. Some species exist in the same environments inhabited by humans, and can cause myiasis (Zumpt, 1965). Myiasis is infestation of humans or other vertebrates with dipterous larvae that feed on tissue or body fluids (Zumpt, 1965). As of 1965, about 15 species of Sarcophaga had been reported to cause myiasis (Zumpt, 1965). Species of sarcophagids reported to infest humans include: Sarcophaga argyro stomata (Robineau-Desvoidy, 1830) (Burgess and Spraggs, 1992), Sarcophaga crassipalpis Macquart, 1839 (Morris, 1987), Boettcherisca peregrina (Robineau-Desvoidy, 1830) (Miura et al, 2005), Wohlfahrtia magnifica (Schiner 1862) (Droma et al, 2007), and Berceafrica (Wiedemann, 1824) (= Sarcophaga haemorrhoidalis) (Braverman et al, 1994; Abdel-Hafeez et al, 2015).

A total of 83 species from 29 genera of flesh flies have been reported in Thailand (Kurahashi and Chaiwong, 2013). Bänziger and Pape (2004) reported female P. dux larviposits on both feces and carrion, suggesting an increased chance of human involvement in urban habitats. A fly fauna survey found this species has synanthropy with humans (Chaiwong et al, 2014). This close association increased the risk of human myiasis.

In Thailand, the paucity of published
A 64-year-old male, retired government employee presented to the hospital with a black mass on the dorsum of a right great toe which has been presented for 6 months. He took long term warfarin, tritace and digoxin for dilated cardiomyopathy and atrial fibrillation. Six months ago, he went to a community hospital where the nail extraction was performed. One month later, he came to the surgical department of our hospital because of the wound infection. Black necrotic tissue with pus was noticed. Debridement and curettage was performed with gross bleeding and the antibiotics (intravenous ceftriaxone 2 g/d and oral augmentin) were prescribed because of the wound inflammation and the presence of pus. The pus culture grew *Enterococcus faecalis* and *Staphylococcus aureus*. He was referred back to the community hospital for wound care and dressing. The infection was controlled when he came back to the surgical department 1 month later. Dark color granulation tissue with necrotic tissue was noted. The surgeon consulted a cardiologist to stop the anticoagulant. Then, the patient lost to follow-up. He came back to the dermatology unit 4 months later because of the non-healing ulcer with bloody discharge. Examination of the right big toe showed an irregular 3-cm black mass with superficial erosion, contact bleeding and crust at the dorsum of distal phalanx (Fig 1). No nail plate was found. Fly larvae (maggot) were also seen creeping in the mass and were removed with forceps. Ten days later, the pathological examination reported malignant melanoma that was found negative to BRAF V600E mutation. The toe amputation and right groin nodes dissection were performed. The groin nodes, 4/12 nodes, were positive for metastatic melanoma with perinodal soft tissue invasion. CT chest and abdomen was negative. He has been treated by the
radiologist and oncologist. The patient is still alive 6 months after the diagnosis of malignant melanoma.

Entomological examination of the fly larvae was performed. The larvae were white, fusiform in shape with a stout body. They had a posterior spiracle within a deep cavity, suggesting they were the larvae of the flesh fly (Fig 2A). Four specimens were collected and put in 70% ethanol; 3 live second instar larvae were reared to adulthood for morphological

Fig 2–Parasarcophaga dux. A) second instar larvae removed from the patient, Bar = 2 mm. B) male fly that emerged from a reared larva, dorsal view, Bar = 2 mm. C) male fly that emerged from a reared larva, lateral view, Bar = 2 mm. D) Male genitalia showing the apically bifurcated juxta (arrow), Bar = 3 mm.
identification. A key for flesh flies in Thailand (Kurahashi and Chaiwong 2013) was used to identify the adult flies as Parasarcophaga dux on the basis of its body and genitalia (Fig 2B, 2C). Examination of the male fly genitalia revealed prominence of apically bifurcated juxta (Fig 2D).

DISCUSSION

Human myiasis caused by Parasarcophaga dux is rare (James, 1947). This could be the first report of myiasis caused by P. dux in a human occurring in a malignant melanoma. Poor personal hygiene can allow female P. dux larviposit. Investigation of this fly in the laboratory revealed one female larviposits ~20-40 larvae (Sukontason KL, unpublished data). To the best of the authors’ knowledge, this is the second reported case of P. dux myiasis among humans in Thailand and the first reported dermal infestation. As mentioned previously, the first case was P. dux causing aural myiasis; this was a case from Ubon Ratchathani Province, Thailand (Chaiwong et al, 2014). In a recently published review, only three cases of human myiasis caused by flesh flies have been documented, including this case in Thailand. According to Pape (1996), P. dux has wide distribution, found in: Palaeartic, Afrotropical, Oriental, and Australasian/Oceanian regions. In Thailand, this species exists in a variety of habitats: urban, suburban, beach and mountains up to 1,300 m elevation, suggesting its adaptability (Kurahashi and Chaiwong, 2013).

The diagnosis of the subungual melanoma in this case is difficult. Malignant melanoma in Thailand is very rare. Clinical manifestations of subungual hematomata and melanoma are almost the same. Because of the history, bleeding tendency from the anticoagulant, similarity of the clinical manifestations and the incidence of the disease can cause a missed diagnosis, even by a dermatologist.

Knowledge of P. dux biology helps us understand how humans can become accidental hosts (Bänziger and Pape, 2004). The overlap between human and P. dux habitats means humans are at risk for myiasis due to this species.

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REFERENCES


