

Aural myiasis caused by *Parasarcophaga (Liosarcophaga) dux* (Thomson) in Thailand

Chaiwong, T.^{1*}, Tem-Eiam, N.², Limpavithayakul, M.³, Boongunha, N.², Poolphol, W.³ and Sukontason, K.L.⁴

¹College of Medicine and Public Health, Ubon Ratchathani University, Ubon Ratchathani 34190, Thailand

²Sisaket Hospital, Sisaket 33000, Thailand

³Office of Disease Prevention and Control 7, Ubon Ratchathani 34000, Thailand

⁴Department of Parasitology, Faculty of Medicine, Chiang Mai University, Chiang Mai 50200, Thailand

*Corresponding author email: tarinee.4004@gmail.com

Received 3 February 2014; received in revised form 17 March 2014; accepted 18 March 2014

Abstract. Herein is reported the first case in Thailand of aural myiasis caused by the flesh fly, *Parasarcophaga (Liosarcophaga) dux* (Thomson). A 5-day-old infant was taken to hospital with a slightly bloody ear. Two fly larvae exiting the ear and another recovered by a physician were alive, and confirmed as *P. dux* species from adult examination results. This case brought attention to the need for protection against synanthropic flies, particularly for infants and/or hearing impaired patients.

Although numerous myiasis producing fly species are indigenous to Thailand's fauna, myiasis cases might have been underreported for several reasons (e.g. personal reasons, not worth reporting, difficulty in fly identification etc.). The species reported to have caused myiasis in Thailand were *Chrysomya bezziana* (Papasarathorn & Piyarasana, 1962; Papasarathorn *et al.*, 1967; Koranantakul *et al.*, 1991; Nacapunchai & Laohavichit, 1999; Sukontason *et al.*, 2006), *Chrysomya megacephala*, *Achoetandrus rufifacies* (Sukontason *et al.*, 2005), *Oestrus ovis* (Nacapunchai *et al.*, 1998), *Eristalis tenax* (Siripoonya *et al.*, 1993), and *Dermatobia hominis* (Thanapatcharoen *et al.*, 2012). Only a single species of flesh fly; *Liopygia ruficornis*, was recorded (Sucharit *et al.*, 1981). Herein, we report a case of aural myiasis caused by the larva of another flesh fly species; *Parasarcophaga dux*.

Case History and Entomological Finding

A 5-day-old infant was taken to hospital with a slightly bloody ear, from which two second

instar (each ~0.5 cm) were exiting and later died. Another invasive larva was removed with fine forceps by a physician during check up, thus revealing a stout-bodied flesh fly, recognized by its pair of posterior spiracles deep within a cavity. This larva was then placed in a small petri dish containing a tiny piece of beef (2x2 cm.) as a food source. The larva completed development and the adult was kept for identification (Figure 1). Species identification confirmed that the resulting adult male was a *P. dux* (Figure 2), based on the key of flesh flies in Thailand (Kurahashi & Chaiwong, 2013). The characteristic of the terminalia *P. dux* is presented in Figure 2A, the cercus normal in shape, not enlarged dorsally and without spines; ventralia composed of 1 lobe; lateral arm of juxta bifid at apex and Y-shaped of the fifth sternite (Figure 2B). The wound on the ear of the patient was treated with an antibiotic (amoxicillin 1.5 mg/ml) and ofloxacin ear drops (0.3%, 5 ml) according to the symptoms. Follow-up after treatment revealed complete resolution of the wound.



Figure 1. Male *P. dux* that emerged from reared puparium

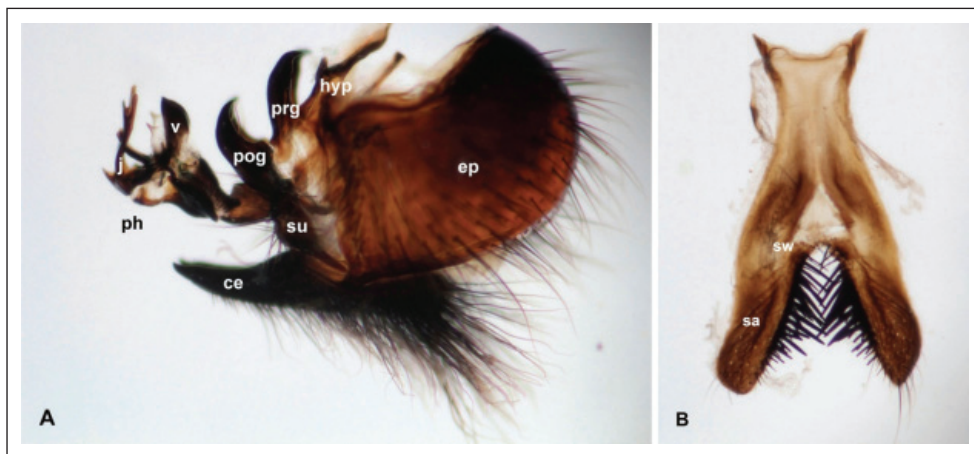


Figure 2. Light micrographs of the male genitalia. (A) Lateral view of the terminalia *P. dux* showing the cercus (ce) normal in shape, not enlarged dorsally and without spines; ventralia (v) composed of 1 lobe; lateral arm of juxta (j) bifid at apex. Ph, phallus; ep, epandrium; hyp, hypandrium; su, surstylus; prg, pregonite and pog, postgonite. (B) Ventral view of fifth sternite demonstrating Y-shaped sternite. Sa, sternal arms and sw, sternal window

DISCUSSION

To the authors' knowledge, this is the first report in Thailand of myiasis in humans caused by *P. dux*. A previous study reported myiasis caused by the flesh fly, *L. ruficornis* (Sucharit *et al.*, 1981). In Thailand, both these flesh fly species are synanthropic, thereby enhancing the risk that females could larviposit on humans, thus the risk of myiasis.

Biological knowledge of *P. dux* helps in understanding how humans may become an

accidental host for this flesh fly species. In Thailand, female *P. dux* larviposit in both feces and carrion (Bänziger and Pape, 2004), and are found commonly in a synanthropic environment (Chaiwong *et al.*, 2012), thus allowing their involvement in human myiasis. According to the literature, *P. dux* causing human cases of myiasis is rare (James, 1947). In domestic animals, this species has been thought to be associated with flies in camels (Wernery and Kaaden, 2002).

Although reports of myiasis in infants are very rare in Thailand, this case exhibits the need for vigilant sanitation that may offer protection against synanthropic flies that dwell in human environments.

Acknowledgments. This work was supported by the Ananthamahidol Foundation (to TC) and in part by a grant from the Thailand Research Fund (RSA5580010 to KLS).

REFERENCES

- Bänziger, H. & Pape, T. (2004). Flowers, faeces and cadavers: natural feeding and laying habits of flesh flies in Thailand (Diptera: Sarcophagidae, *Sarcophaga* spp.). *Journal of Natural History* **38**: 1677-1694.
- Chaiwong, T., Srivoramas, T., Sukontason, K., Sanford, M., Moophayak, K. & Sukontason, K.L. (2012). Survey of the synanthropic flies associated with human habitations in Ubon Ratchathani province of Northeast Thailand. *Journal of Parasitology Research* 2012: Article ID 613132, 9 pages; doi:10.1155/2012/613132
- James, M.T. (1947). The flies that cause myiasis in man. United States Department of Agriculture, Washington.
- Koranantakul, O., Lekhakula, A., Wansit, R. & Koranantakul, Y. (1991). Cutaneous myiasis of vulva caused by the muscoid fly (*Chrysomya* Genus). *Southeast Asian Journal of Tropical Medicine and Public Health* **22**: 458-460.
- Kurahashi, H. & Chaiwong, T. (2013). Keys to the flesh flies of Thailand, with description of a new species of *Robineauella* Enderlein (Diptera: Sarcophagidae). *Medical Entomology and Zoology* **64**: 83-101.
- Nacapunchai, D., Lamon, C. & Sukprasert, N. (1998). A first record from Thailand of human external ophthalmomyiasis due to *Oestrus ovis*. *Southeast Asian Journal of Tropical Medicine and Public Health* **29**: 133-136.
- Nacapunchai, D. & Laohavichit, K. (1999). Human myiasis caused by *Chrysomya bezziana* larvae in gangrenous wound following snake bite. *Mahidol Medical Journal* **6**: 81-83.
- Papasarathorn, T., Chularerk, P., Limcharoen, C. & Rojanapremsook, J. (1967). Human myiasis caused by *Chrysomya bezziana* Villeneuve. *Journal of the Medical Association of Thailand* **50**: 761-766.
- Papasarathorn, T. & Piyarasana, S. (1962). A report case of myiasis caused by the larvae of *Chrysomya bezziana* Villeneuve. *Journal of the Medical Association of Thailand* **45**: 47-52.
- Siripoonya, P., Tesjaroen, S. & Viravan, C. (1993). Intestinal myiasia: a case report. *Journal of the Medical Association of Thailand* **76** Suppl 2: 229-231.
- Sucharit, S., Kerdpibule, V., Tumrasvin, W., Deesin, T. & Nakorn, C.N. (1981). Myiasis of the vagina of a comatose women caused by *Parasarcophaga ruficornis* Fabricius. *Journal of the Medical Association of Thailand* **64**: 580-583.
- Sukontason, K.L., Narongchai, P., Sripakdee, D., Boonchu, N., Chaiwong, T., Ngern-Klun, R., Piangjai, S. & Sukontason, K. (2005). First report of human myiasis caused by *Chrysomya megacephala* and *Chrysomya rufifacies* (Diptera: Calliphoridae) in Thailand, and its implication in forensic entomology. *Journal of Medical Entomology* **42**: 702-704.
- Sukontason, K.L., Piangjai, S., Boonsriwong, W., Bunchu, N., Ngern-Klun, R., Vogtsberger, R.C. & Sukontason, K. (2006). Observations of the third instar larva and puparium of *Chrysomya bezziana* (Diptera: Calliphoridae). *Parasitology Research* **99**: 669-674.
- Thanapatcharoen, A., Preativatanyou, K., Phumee, A., Kraivichain, K., Sitthicharoenchai, P., Wilde, H. & Siriyasatien, P. (2012). Cutaneous myiasis caused by *Dermatobia hominis* in Thai travelers: first report in Thailand. *Asian Biomedicine* **6**: 487-494.
- Wernery, U. & Kaaden, O.R. (2002). Infectious diseases in camelids. Blackwell Wiss.-Verl., Berlin.