# Human urinary myiasis due to larvae of *Clogmia (Telmatoscopus) albipunctata* Williston (Diptera: Psychodidae) first report in Egypt

Ayman A. El-Badry<sup>1</sup>, Hosni Khairy Salem<sup>2</sup>, Yusuf Abd El-Aziz Edmardash<sup>3</sup>

<sup>1</sup>Medical Parasitology Department; <sup>2</sup>Urology Department, Kasr Al-Ainy Faculty of Medicine; <sup>3</sup>Entomology Department, Faculty of Science, Cairo University, Cairo, Egypt

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Human myiasis is defined as "the infestation of the tissue of living human with dipterous larvae"<sup>1</sup>. Parasitologically myiasis could be classified as obligatory, facultative or accidental. Clinically myiasis may be classified according to part of the body tissue invaded. Cutaneous myiasis is the commonest type. Body cavity myiasis; nasopharyngeal, ocular, aural and the gastrointestinal tract urogenital system are less common. Urethral myiasis is exceptionally rare, even in sites usually protected by clothes, inaccessible for the flies<sup>1-2</sup>. A large number of fly species may cause urinary myiasis. Larvae of Fannia scalaris<sup>3</sup> is the most frequent cause of urinary myiasis. Other fly genera Musca, Sarcophaga, Lucilia, Wohlfahrtia or Calliphora were also associated with cases of urinary myiasis<sup>4</sup>. Few cases of urinary myiasis were caused by Eristalis<sup>5,6</sup>, Psychoda<sup>7</sup> and Megaselia<sup>8</sup> flies. Cases of urinary myiasis were caused by larvae of Clogmia albipunctata worldwide9 but had never been reported before in our region.

Urinary myiasis may occur whilst human urinate in unsanitary toilets or at night in warm weather whilst peoples (usually females) sleeping without covering. Urogenital discharges, or soiled or un-bathed pubic area may attract fly oviposition around the external genitalia and urethral orifices, then hatched larvae may enter the bladder and pass through urethra and produce symptoms of cystitis and/or urethritis that may include dysuria, haematuria, urethral discharge, and abdominal pain<sup>3,10</sup>.

Urogenital myiasis usually occurs in human with poor personal hygiene, poor general condition, with low mobility and ulcerating lesions. Urinary myiasis may be associated with underline urinary tract pathology<sup>6</sup> or surgical intervention<sup>7,10</sup>. The pathogenicity results from inflammation and toxin secreted by the larvae which prevents healing, progressive and continuous necrosis of bladder wall may occur associated with larval growth and invasion<sup>11</sup>. We report on the first case of human urinary myiasis caused by *Clogmia albipunctata* in Egypt and the second case worldwide.

## Case report

The patient presented with repeated passage of numerous living dark-colored larvae in urine, 7–12 larvae were voided intermittently over two months. She was complaining of dysuria, fever and itching in the periurethral and genital regions. No history of travelling outside Egypt in the past or the present time. Complete urine analysis and stool examination using direct and concentrated smear was done. Plain X-ray and pelviabdominal ultrasound were also done.

Larvae from two different fresh urine samples were identified morphologically as larvae of *Clogmia albipunctata* (Diptera: Psychodidae). Repeated passages of different larval stages in this case confirmed our diagnosis of true urinary myiasis. Voided urine with larvae and urine in between passages of larvae was normal on microscopical examination. Stool examinations and imaging were normal. Urine analysis and culture was free, plain X-ray and pelviabdominal ultrasound revealed no abnormalities. A written consent was obtained from the patient.

# Description of full grown larva (Figs. 1 & 2)

Length is about 9–11 mm and coloration is generally yellowish-brown to dark brown dorsally and yellowish or ivory ventrally; head, anterior and lateral sides of dor-



*Fig. 1:* Full grown larva (stage IV) of *Clogmia albipunctata* (Williston): (a) Full larva, dorsal aspect; and (b) Anus, ventral aspect.



*Fig. 2:* Full grown larva (stage IV) of *Clogmia albipunctata:* (a) Full larva; (b) Middle segments showing dorsal plates and dorsal and lateral setae; (c) Caudal part showing siphon and end processes, dorsal aspect; and (d) Caudal part showing anus, ventral aspect.

sal plates and siphon are much darker; the one or two last dorsal plates and the four anal processes may be completely blackish.

The body consists of eleven segments in addition to head, the body dorsally with 26 plates and densely covered with yellowish back-warding setae dorsally and laterally, the first three dorsal plates are slightly bilobed while the other plates are oblong and variable in width; head is moderate in size and triangle, bearing a minute antennae and a mouthpart ventrally which is located in a triangular space.

Each segment is subdivided into three annuli except the first abdominal segment which has two annuli and the eighth without divisions. The anterior spiracles are located on the middle of prothoracic segment. The lateral margins of the first five abdominal segments each have an anterior hair and subequal 2 or 3 posterior hair.

The siphon is cone-shape, 3 to 4 times as long as broad; the two dorsal anal processes are longer than the ventral ones, each bearing long hair which ventrally slightly longer than that of dorsal processes.

# DISCUSSION

*Clogmia (Telmatoscopus) albipunctata* is a primitive Nematocera of the family Psychodidae, subfamily Psychodinae which are non-biting moth flies known as drain, and bathroom or filter flies<sup>13</sup>. *Clogmia albipunctata* is cosmopolitan in distribution; the adult flies are often seen in moist places, especially bathrooms and toilets<sup>14</sup>. In Egypt, Efflatoun has studied this species (as *Telmatoscopus meridionalis*); he detected the larva of this species living in a very large number together with other dipteran larvae in a water tank used for macerating bones at Kasr Al-Ainy hospital<sup>15</sup>.

This species could be differentiated form the species of genus *Psychoda latreille* by the body coloration where members of genus *Psychoda* are much lighter in color, in addition to the number of dorsal plates which they are less than 26 in number. Moreover, the members of genus *Psychoda* are characterized by lateral margins of the first five abdominal segments with not more than one conspicuous posterior hair and one minute anterior hair<sup>16</sup>.

On the other hand, this species differ from the most common psychods species (*Psychoda albipennis*) in the following characters; body length 3.5 mm, the posterior 7 or 8 dorsal plates are only easily seen, sometimes additional plates are visible anteriorly and the siphon is slender, 7 to 8 times as long as broad<sup>1,17–18</sup>.

In spite that adults of *Clogmia albipunctata* are of minor medical importance, are only annoyances, however, have been implicated in inhalant allergy in many cases in South Africa<sup>13</sup> and as a potential mechanical vector of bacterial pathogens associated with nosocomial infections in infested German hospitals<sup>19</sup>.

Larvae of *Clogmia albipunctata* were reported before as cause of human nasopharyngeal myiasis<sup>14,20</sup>, intestinal myiasis<sup>21–22</sup> and urinary myiasis<sup>9,10</sup>. Larvae in this case were passed for 10 days after antibiotic and antiseptic treatment; then larvae passage and other patient symptoms disappeared.

To our knowledge this the first report of human urinary myiasis caused by *Clogmia albipunctata* in Egypt and the second case worldwide. This case draws the attention of urologists and laboratoreans of the possibility of detecting dipteran flies' larvae in urine and urinary myiasis as an unusual cause of urinary tract infection.

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## REFERENCES

- 1. Zumpt F. *Myiasis in man and animals in the old world*. London, UK: Butterworths 1965; p. 267.
- 2. Hall M, Wall R. Myiasis of humans and domestic animals. *Adv Parasitol* 1995; *35*: 258–334.

- Perez-Eid C, Mouffok N. Human urinary myiasis caused by *Fannia canicularis* (Diptera: Muscidae) larvae in Algeria. *Presse Méd* 1999; 28: 580–1.
- Salimi M, Goodarzi D, Karimfar MH, Edalat H. Human urogenital myiasis caused by *Lucilia sericata* (Diptera: Calliphoridae) and *Wohlfahrtia magnifica* (Diptera: Sarcophagidae) in Markazi Province of Iran. *Iranian J Arthropod Borne Dis* 2010; 4: 72–6.
- Mumcuoglu I, Aral Akarsu G, Balaban N, Keles I. *Eristalis tenax* as a cause of urinary myiasis. *Scand J Infect Dis* 2005; *37:* 942– 3.
- Korzets Z, Bernheim J, Lengy J, Gold D. Human urogenital myiasis due to *Eristalis* larva: An unusual cause of ureteric obstruction. *Nephrol Dial Transplant* 1993; 8: 874–6.
- Güven E, Kar S, Doðan N, Karaer Z. Urogenital myiasis caused by *Psychoda albipennis* in a woman. *Turkiye Parazitoloji Dernegi* 2008; 32: 174–6.
- Wakid MH. A laboratory-based study for first documented case of urinary myiasis caused by larvae of *Megaselia scalaris* (Diptera: Phoridae) in Saudi Arabia. *Korean J Parasitol* 2008; 46: 33–6.
- Kamimura K, Arakawa RA. Case report on urinary myiasis due to the moth fly, *Telmatoscopus albipunctata*. *Med Vet Entomol* 1986; *37*: 161–2.
- Hyun DY, Cain MP, Blue-Hnidy DE, Conway JH. Urinary myiasis associated with ureteral stent placements. *Pediatr Infect Dis* J 2004; 23: 179.
- Gopalakrishnan S, Srinivasan R, Saxena SK, Shanmugapriya J. Myiasis in different types of carcinoma cases in southern India. *Indian J Med Microbiol* 2008; 26: 189–92.
- Wagner, R. Fauna Europaea: Psychodidae. In: Jong H de, editor. *Fauna Europaea: Diptera, Nematocera*. Fauna Europaea version 2.4.2011. Available from: *http://www.faunaeur.org* (Accessed on October 30, 2013).

- Mullen GR, Durden L. *Medical and veterinary entomology*. In: Rutledge CL, Gupta KR, editors. Chapter 11: Moth flies and sandflies (Psychodidae). II edn. Cop San Diego, California: Elsevier Academic Press 2009; p. 147.
- Nevill EM, Basson PA, Schoonraad JH, Swanepoel K. A case of nasal myiasis caused by the larvae of *Telmatoscopus albipunctata* (Williston) 1893 (Diptera: Psychodidae). *S Afr Med J* 1969; 43: 512–4.
- 15. Efflatuon HC. The life-history of *Telmatoscopus meridionalis* Eaton. *Bull Entomol Soc Egypt* 1920; 6: 22–34 (2 plates).
- Bohart GE, Gressitt JL. Filth-inhabiting flies of Guam, Bernice P. Bishop Museum, and Honolulu, *Hawaii Bull* 1951; 104: 52.
- Keilin D, Tate P. A comparative account of the larva of *Trichomyia urbica* Curtis, *Psychoda albipennis* Zett. and *Phlebotomus argentipes* Ann. & Brun. (Diptera: Psychodidae). *Parasitology* 1937; 29: 247–58.
- 18. Satchell GH. The larvae of British species of *Psychoda* (Diptera: Psychodidae). *Parasitology* 1947; *38:* 51–69.
- Faulde M, Spiesberger M. Role of the moth fly *Clogmia* albipunctata (Diptera: Psychodinae) as a mechanical vector of bacterial pathogens in German hospitals. *J Hosp Infect* 2013; 83(1): 51–60.
- Mohammed N, Smith KG. Nasopharyngeal myiasis in man caused by larvae of *Clogmia (Telmatoscopus) albipunctatus* Williston (Psychodidae, Dipt.). *Trans R Soc Trop Med Hyg* 1976; 70: 91.
- Smith KG, Thomas V. Intestinal myiasis in man caused by larvae of *Clogmia* (= *Telmatoscopus*) *albipunctata* Williston (Psychodidae, Diptera). *Trans R Soc Trop Med Hyg* 1979; 73: 349–50.
- Tu W, Chen H, Chen K, Tang L, Lai S. Intestinal myiasis caused by larvae of *Telmatoscopus albipunctata* in a Taiwanese man. J *Clin Gastroenterol* 2007; 41: 400.

Correspondence to: Prof. Ayman A. El-Badry, Medical Parasitology Department, Kasr Al-Ainy Faculty of Medicine, Cairo University, El-Manial, Cairo, Egypt. E-mail: aelbadry@kasralainy.edu.eg

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