



Inflammation and infection

Human urinary myiasis by *Psychoda albipennis*: A case report and review of literature

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Introduction

Human myiasis is defined as “the infestation of the tissue of living human with dipterous larvae”. 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. Urinary myiasis is exceptionally rare, as sites usually protected by clothes, inaccessible for the flies. A large number of fly species may cause urinary myiasis. Larvae of *Fannia scalaris* 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.¹ There were few cases of urinary myiasis, caused by *Eristalis*, *Psychoda*² and *Megaselia* flies. Few cases of urinary myiasis were caused by larvae of *P. albipennis* worldwide but had never been reported before in our region.²

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 pass through urethra and enter the bladder and produce symptoms of cystitis and/or urethritis that may include dysuria, haematuria, urethral discharge, and abdominal pain.

Urinary myiasis may be associated with underline urinary tract pathology or surgical intervention. 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.

We report on the first case of human urinary myiasis caused by *Psychoda albipennis* in India.

Case report

A 19 year old female from lower socio economical class, presented to urology department with complain of repeated passage of live worms in urine since 2–3 years. She passes 15–20 larvae. She was complaining

of dysuria, fever and itching in the periurethral and genital regions on and off during this period. She was treated at other centers with suspicious of UTI and infestation by intestinal parasites with anti bacterials and antiparasitic.

Complete urine analysis and stool examination using direct and concentrated smear was done. Plain X-ray and pelviabdominal ultrasound were also done. Larvae isolated from two different fresh urine samples were identified morphologically as larvae of *P. albipennis* by examining under stereoscopic microscope and transmission electron microscope. 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, pelviabdominal ultrasound, ct scan and mri abdopelvis revealed no abnormalities.

Patient has undergone cystoscopy. Bladder neck was congested with few diffuse ulceration and bladder washfluid was containing few larvae. Patient was advised about maintenance of personal hygiene and maintaining hydration with 3 ltrs of water everyday. She was given a single dose ivermectin 12 mg and course of urinary antibiotic.³ Patient is asymptomatic at present with no worms in urine.

Discussion

Psychoda albipennis is a primitive Nematocera of the family Psychodidae, subfamily Psychodinae which are non-biting moth flies known as drain, and bathroom or filter flies. *Psychoda albipennis* is cosmopolitan in distribution; the adult flies are often seen in moist places, especially bathrooms and toilets.⁴

The larvae of *Psychoda albipennis*'s are whitish gray, about 3–5 mm in size, worm-shaped, and it has a slightly flat appearance. They are covered with short hair or scales and sometimes they have denticles on the edges. The number of plaques localized in the back of the body is variable and 7–8 rings are generally noted towards the back. Its syphon thins from the base to the tip and there is a double knob covered with long hair at the end (Figs. 1 and 2).

The larvae usually thrive in damp and dirty areas, garbage piles and irrigation canals where plenty of bacteria are available for larvae's to

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Fig. 1. *Psychoda* larvae under gross examination.



Fig. 2. *Psychoda* larvae under magnification.

survive. The fourth stage of larvae can infest on human urine.

Although it is relatively rare for humans to be infected with such a larvae, it still remains frequent in tropical countries, especially in rural areas with poor sanitation. Potential presence of larvae in female genitourinary tract is explained by use of public lavatory, where moth fly laid its eggs attracted by women's discharge and occasional bleeding.

Once the larvae opportunistically enter body cavities such as the nasopharyngeal passage, intestine, and urinary tract, these organs may create a breeding ground for infection, including myiasis. In the present case, we confirmed that an 18-year-old woman contracted urinary myiasis caused by larvae of *Psychoda albipennis* infection. Urinary tract pathology, induce by inflammatory toxins, microorganisms, and viruses secreted by the larvae, and the larval migration can result in progressive and continuous necrosis of bladder wall. In addition to *Psychoda albipennis*, several urogenital myiasis cases caused by other species were reported in the past. For example, urogenital myiasis caused by *T. albipunctatus* was reported in a 50-year-old woman, and *Eristalis tenax* was reported in a 58-year-old woman. Such patients may complain of urinary frequency, irritation, dysuria, and itching. Vomiting and side pain may also be observed.

All these cases associated with poor sanitation and unhygienic domestic environments, including adverse living conditions,

overcrowding, poor ventilation, and inadequate sewage systems, create higher risks for urinary myiasis. So, environmental health approaches should be the primary approach to controlling urogenital myiasis.⁵ Poor personal hygiene, individual health conditions (immunosuppressed or immunocompromised status), low mobility, and ulcerating lesions are other risk factors for urinary myiasis and should be considered. In this case, we speculated that the patient was infected by the larvae by urinating into unsanitary toilets or sleeping at night in warm weather without a covering. The anatomical and physiological characteristics of the female urethra and poor personal hygiene may have increased her likelihood of infection. Fortunately, life cycle can not be completed in human body. So when the patients improve their hygienic consciousness and sanitary conditions, cycle of reinfection can be broken and they could recover without any symptoms after being treated adequately with antihelminthic and urinary tract antiseptic drugs.

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Nil.

Conflicts of interest

Nil.

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Appendix A. Supplementary data

Supplementary data related to this article can be found at <https://doi.org/10.1016/j.eucr.2018.08.015>.

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