Clinical Pearls

Urinary myiasis: not your typical urinary tract infection

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A 57-year-old Caucasian man presented to our travel clinic after returning from a 3-week trip to Iraq and Afghanistan complaining of passing a worm-like structure during micturition. The patient lived in Montreal, Canada. His medical and psychiatric history was unremarkable. He travelled to Iraq and Afghanistan for tourism. He ate local street food, resided in housing with poor sanitary conditions and used fly-infested pit latrines. He denied any sexual encounter, animal exposures or insect bites.

One week after his return, he noticed the passage of a small ‘worm’ via his urethra but was unable to collect it. He denied dysuria, hematuria, urgency, abdominal pain or peri-anal pruritus. Physical examination and laboratory findings were unremarkable. Three months later, the patient had recurring passage of ‘worms’ and was able to collect one. The larva was sent for identification to the Montreal Insectarium. Morphological assessment revealed a small 4-mm larva (Figure 1) belonging to the species Clogmia albipunctata (Williston) (Diptera: Psychodidae). The specimen (BOLD DOI: dx.doi.org/10.5883/DS-CLOGMIA; GenBank accession: MK812918) was also submitted for DNA barcoding. Our sequence was under 4% divergent from the closest C. albipunctata and was assigned to BIN: BOLD:AAE5173 (DOI: dx.doi.org/10.5883/BOLD:AAE5173). Additional investigations included a normal abdominal ultrasound and a normal cystoscopy. The patient was treated with a single oral dose of ivermectin 200 μg/kg. Five months after treatment, he has not experienced further passage of larvae in the urine.

Myiasis is an infestation of living and necrotic vertebrate tissue by fly larvae that feed in living or dead tissue, liquid substance of ingested food, 1,2 in the event that larvae fortuitously reach the urethra or the internal urogenital tract, we refer to urinary myiasis that is more common in patients with poor personal hygiene or psychiatric disturbances but can also be observed in healthy people. 3 Few fly species can cause urinary myiasis. The most commonly involved are the Psychodidae Psychoda albipennis Zetterstedt, Psychoda alternata Say and C. albipunctata. 1,3 These flies are cosmopolitan and their larvae can be found in drains or sewers. Adult flies feed on nectar and wastewater; natural substrate for egg laying is wet, decaying vegetation in aquatic environments. Larvae feed on vertebrate faeces and on decaying organic matters. 1 Direct contacts with eggs can occur through contaminated skin (lay directly on human genitals), contaminated surface (latrines, openings of waste pipes) or contaminated clothing (underwear or menstrual pads) and subsequently transfer to the genital area, with larvae migration up the urinary tract. Infestation can also occur with catheter insertion, vaginal douching or forceful washing with contaminated matters. 1 Additional risk factors include genital carcinoma, ulcerative lesions, obstructive stone, stenosis and indwelling urinary catheter. 1 There is no established treatment for urinary myiasis. Clinical success has been reported with aggressive hydration, 4 antiseptic bladder irrigation 5 or oral antiparasitic agents such as mebendazole or ivermectin. 2,3

The differential diagnoses included cystitis, urethritis or lichen planus which was excluded by a negative work-up. Enterobius vermicularis (L) infestation with ectopic migration to the urinary tract was considered but excluded by morphologic examination of the larva. Urinary myiasis was diagnosed based on the patient’s testimony and entomologic identification of the larva. Given the normal lifespan of C. albipunctata of 35 days, it is unclear why the patient experiences prolonged intermittent shedding of larvae over a 3-month period. To date, the pathophysiology of human urinary myiasis and larval survival in the internal...
Figure 1. Clogmia albipunctata (a) larval habitus, lateral view; (b) larval habitus, ventral view; (c) apex of the respiratory organ (siphon); (d) larval habitus, dorsal view. (Figure a: A. G. Depatureaux; Figures b, c, d: A. Cecan)

urinary tree has not been well studied, and perhaps survival beyond 35 days is possible. Other possible explanations include infestation (re-infestation) with fly larvae in Canada, although this has not been described in western countries in a normal host with usual sanitation facilities, or delusional parasitosis with environmental larvae recovery even though the patient did not show any other manifestation of a psychiatric illness. The patient denied exposure to this type of fly after returning to Canada; however, Psychodae flies are endemic in North America and can be found in public places such as public washrooms and sport complex centres. In conclusion, urinary myiasis is a condition that usually affects humans from developing countries but has rarely been reported in developed countries. We describe the first case of urinary myiasis diagnosed in Canada, where clinicians may be unfamiliar with this rare entity.

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