

Unusual presentation of the urogenital myiasis caused by *Luciliasericata* (Diptera: Calliphoridae)

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Abstract

Introduction and objective. The case report describes the unusual presentation of the urogenital myiasis caused by *Luciliasericata* in two Slovakian men.

Material and methods: The first patient, aged 66, who suffered from a locally advanced and inoperable urinary bladder dedifferentiated TCC with bilateral ureteral obstruction, chronic renal insufficiency and non-functioning left kidney. After surgical exploration the patient developed a malignant vesico-intestino-cutaneous fistula with stool leakage through the open wound. Because of very poor hygiene, and unsatisfactory attendance by staff, a fly deposited ova in the patient's necrotic wound. The patient died three months later of metastatic cancer disease. The second patient, a 43-year old homeless alcoholic male had gangrene of the scrotum and penis, urethro-cutaneous urinary fistula with numerous live and motile larvae on the surfaces. In both patients, some larvae were removed and sent to the lab for identification. The larvae were identified as maggots of the fly *Luciliasericata*. Antibiotic therapy, disinfection and debridement with sterile covering of the wound were used.

Results: For both patients, complex treatment of myiasis was successful and patient recovered without parasitic consequences.

Conclusions: To our knowledge, this is the first report of the unusual presentation of the urogenital myiasis in Slovakian men with poor social habits and hygiene.

Key words

urogenital myiasis, infected wounds, poor hygiene

INTRODUCTION

Myiasis (*myia* is Greek for fly) is defined as an infestation of the skin, organs and tissues of human or other vertebrate animals by developing larvae (maggots) of a variety of species of flies within the arthropod order Diptera [1]. Myiasis presents a serious problem for livestock industries, causing severe economic losses worldwide. In view of environmental conditions it also causes health problems in humans. Currently, myiasis commonly is classified according to aspects relevant to the case in question. The classical description of myiasis is according to the part of the host that is infected. This is the classification used by ICD-10. For example: 1 – dermal; 2 – sub-dermal; 3 – cutaneous (B87.0); 4 – nasopharyngeal nose, sinuses or pharynx (B87.3); 5 – ophthalmic or ocular, in or around the eye; 6 – auricular, in or around the ear; 7 – gastric, rectal, or intestinal/enteric; 8 – urogenital (B87.8). Another aspect is the relationship between the host and the parasite, and provides an insight into the biology of the fly species causing the myiasis and its likely effect. Thus, the myiasis is described as either: 1 – Obligatory, where the parasite cannot complete its life cycle without its parasitic phase, which may be specific, semispecific, or opportunistic; 2 – Facultative, incidental, or accidental, where it is not essential to the life cycle of the parasite; perhaps a normally free-living larva that accidentally gained entrance to the host [2]. There are 3 main fly families

causing economically important myiasis in livestock and also, occasionally, in humans: *Calliphoridae* (blowflies, among them *Luciliasericata*), *Oestridae* (botflies), *Sarcophagidae* (fleshflies). Other families occasionally involved are *Anisopodidae*, *Piophilidae*, *Stratiomyidae*, *Syrphidae*. Specific myiasis is caused by flies that need a host for larval development – *Dermatobia hominis* (human botfly), *Cordylobia anthropophaga* (tumbu fly), *Oestrus ovis* (sheep botfly), *Hypoderma spp.* (cattle botflies or ox warbles), *Gasterophilus spp.* (horse botfly), *Cochliomyia hominivorax* (new world screwworm fly), *Chrysomya bezziana* (old world screwworm fly), *Auchmeromyia senegalensis* (Congo floor maggot), *Cuterebra spp.* (rodent and rabbit botfly). Semi-specific myiasis is caused by flies that usually lay their eggs in decaying animal or vegetable matter, but can develop in a host if open wounds or sores are present. These include *Lucilia spp.* (green-bottle fly), *Cochliomyia spp.* (blue-bottle fly), *Phormia spp.* (black-bottle fly), *Calliphora spp.* (blowfly), *Sarcophaga spp.* (flesh fly or sarcophagids). Accidental myiasis is also called pseudomyiasis, caused by flies which have no preference or need to develop in a host, but will do so on rare occasions. Transmission occurs through the accidental deposit of eggs on oral or genitourinary openings, or by swallowing eggs or larvae that are on food. These include *Muscadomestica* (housefly), *Fannia spp.* (latrine flies), *Eristalis tenax* (rat-tailed maggots), *Muscina spp.* Larvae may infect dead, necrotic or living tissue in various sites, also in genitourinary system [3].

Urogenital myiasis is a rare manifestation in males living in developed countries with good hygiene, especially in the central part of Europe [4]. 46 articles are to be found in PubMed in the years 1953-2012 (keywords: 'human urogenital myiasis'). In humans, the myiasis due to *Luciliasericata*

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was reported for the first time in 1826 by the German entomologist, Johann Wilhelm Meigen [5].

Objectives. To describe the unusual presentation of the urogenital myiasis caused by *Lucilia sericata* in two Slovakian adult males, the first located in an open urinary bladder malignancy wound, and the second in a homeless alcoholic with necrotic tissue of the penis and scrotum due to poor hygiene.

RESULTS

Case report 1. A 66-year-old man was admitted to hospital with dysuria, pyuria and haematuria, urinary bladder malignancy with bilateral ureteral obstruction, chronic renal insufficiency, and a non-functioning left kidney. After complete clinical examinations, during surgical exploration only biopsy material could be obtained because the fixed tumour infiltrated the neighbouring organs (pT4N2M1). Only a right nephrostomy was performed. After surgery, the patient developed a malignant vesico-intestino-cutaneous fistula with stool leakage through the open wound. Dedifferentiated transitional cell carcinoma (TCC) was proved histologically. Because of poor hygienic status and unsatisfactory attendance, the fly was attracted by the odour during summer days and probably deposited ova near the wound. Approximately 10 live larvae, 8-10mm in length, found in the wound and sent to the Department of Clinical Microbiology and Parasitology of the Medical Faculty and University Hospital in Košice for entomological study. The larvae developed into adult flies, which were identified by the laboratory as flies of the *Lucilia sericata*. Because of the advanced malignant disease, the status of the patient deteriorated, and he died three months later of metastatic cancer disease.

Case report 2. A 43-year-old homeless alcoholic male living in the city, previously an aviation engineer, was brought in by the emergency medical service in a desolate state and with delirium tremens. After emergency examination, he was admitted to the metabolic unit for dehydration, febrile status, sepsis, and gangrene in the urogenital area with intensive odour. Full intensive treatment was immediately begun. The penile, scrotal, and inguinal surfaces were necrotic black tissue, in which numerous live maggots, 10-20mm in length, were found (Fig.1). Initially, a suprapubic cystostomy was performed, followed by removal of the larvae, cleaning of the necrotic tissue and wound nursing. Some larvae were removed from the wound and sent to the laboratory for identification. The larvae were identified as maggots of the fly *Lucilia sericata*, the same as in previous patient at the Department of Clinical Microbiology and Parasitology of Medical Faculty and University Hospital in Košice. Urine culture was repeatedly negative. His status was classified as gangrene in the urogenital area with sepsis, acute renal insufficiency due to acute tubular necrosis, DIC, anaemia, and ulcerous esophagitis. On descending cystourethrography a penile urethro-cutaneous fistula was found. Serology testing for syphilis and tuberculosis were negative. Treatment consisted of local treatment of wounds and associated illnesses, removal of the larvae and the necrotic skin, and parenteral administration of infusions and antibiotics. The



Figure 1. Case 2. Numerous maggots of the *Lucilia sericata* on the penile and scrotal area. An epicystostomy catheter inserted

treatment continued successfully with complete healing by cicatrization of all wounds. Urethral fistula occluded spontaneously without surgical correction. The patient died two years later of renal failure.

DISCUSSION

Lucilia sericata, as a member of the family Calliphoridae, and like many other blow flies, plays an important role in forensic, medical and veterinary science. The sterile maggots (larvae) of the fly can be used for maggot therapy [6].

Myiasis affects more frequently uncovered areas of the body, where the egg deposition becomes easier. It is more common in patients with precarious hygienic practices, psychiatric disturbances (as in the patients in the presented case reports), diabetics, those with immunodeficiency, and in patients on a low economic level [7]. Predisposing factors may be the existence of suppurative lesions that attract and stimulate the deposition of eggs or larvae by the female insect, the habits of the population, such as sitting or lying on the ground in a state of undress, poor personal hygiene, and certain climatic conditions suitable for the flies. In temperate areas, myiasis occurs mainly in the summer months, e.g. in central Europe, whereas in the tropics, all year round [8]. In humans, myiasis is caused by fly larvae capable of penetrating orifices, as well as healthy or necrotic tissue. Tetanus and secondary infection may occur as complications [9].

Genital myiasis can sometimes be seen in the tourists visiting exotic destinations in the tropical regions of Central and South America, as well as Africa and Asia [10, 11]. One unusual case was documented in Nottingham, UK [12]. An insect that deposited ova on the genital area were attracted by the odour caused by lack of proper hygiene, and by coexisting genital infections. It is usually found among people with a low education level, in children and the elderly – men and women. Localization in the genital area is usually associated with promiscuous sexual behaviour in patients with multiple sexual partners, but rare in the vulvar area [13]. It seems probable that the larvae can be deposited when the patient has undressed and been swimming in the river. In rare cases, the larvae were laid in the urogenital region of a woman, and after hatching entered into the vagina and urethra. Maggots were then found in the urine [14]. Myiasis was presented

also in a woman with malignant gynecologic disease (cervix carcinoma, grade III), associated with urinary incontinence due to the spread of the malignancy [15], and in a 41-year-old male patient with advanced epidermoid carcinoma of the penis, in which case urgent partial penectomy was performed [16].

The treatment commonly consists of removal of the parasites and cleansing of the infected area. There are simple hygienic measures, such as washing the body with soap and water, which may prevent the occurrence of diseases. The treatment of most cases of uncomplicated myiasis includes the removal of maggots, sometimes by incision and extraction by forceps or tweezers, some debridement, appropriate wound care, and antihistamines and analgesics for the control of pruritus and pain, respectively. In accordance with the data in the literature has, this treatment was successfully used for the patients in the presented cases. In secondary infected wounds, antibiotics and anti-tetanus immunization may be administered.

CONCLUSION

The two presented cases are the first to be reported of urogenital myiasis caused by *Lucilia sericata* in Slovakian males. Myiasis can also exist in central Europe during the summer months in people with poor social habits and hygiene, or in homeless alcoholics living on the streets. Another possibility is unsatisfactory attendance and wound care by family or staff in elderly patients with chronic wounds. The aim of the treatment is to remove the larvae and treat any secondary infection with antibiotics. Some larvae should be sent to the parasitology laboratory for identification.

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