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Case Report

Urogenital Myiasis in a 5 Years Old Boy: A Case Report

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Abstract
Myiasis infection is caused by the invasion of flies' eggs and larvae into different tissues of the host's body. The rarest form is urogenital myiasis, which can occur even in men with a much lower probability than women, especially in tropical and subtropical regions. The case of this study is a 5-year-old boy from suburbs of Bushehr City, southern Iran who referred to the Pediatrics Department of Persian Gulf Hospital in Bushehr due to constant fever and significant weight loss. In urine evaluation, the presence of *Chrysomya bezziana* larvae was confirmed. The larvae of several species of myiasis-producing flies can attack the urinary-genital system of people and cause urogenital symptoms. Therefore, it is necessary to diagnose and accurately identify the species of larvae that cause myiasis in order to properly treat affected patients.

Introduction

Myiasis infection is caused by the invasion of the larvae of some flies into various tissues of the host body. The word myiasis is derived from the Greek word Myia, meaning the initial stage of the life of flies, first used by Hope in 1840 (1,2).

After the flies lay their eggs in the dead or living tissues of animals and humans, the larvae are released from the eggs and pass a different time stage depending on the larva species and prevailing environmental conditions, which may last between 5-6 days to more than 4-5 weeks (3). Based on the species of myiasis-producing fly larvae, this disease is classified into three groups: obligate myiasis, facultative or opportunistic myiasis, and pseudo-myiasis. Unlike facultative myiasis, where the larvae grow on animal carcasses, decaying organic

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matter and vegetables, and dead human tissues, and sometimes even live in human and animal tissues and cause myiasis, in obligate myiasis, the larvae are only able to grow in the living tissues of the host, and by penetrating into the living tissues, they cause tissue destruction and eventually cause myiasis disease (4, 5). In the third form of myiasis (pseudo-myiasis) in humans, accidental ingestion of the eggs or larvae of myiasis-producing flies along with food can cause digestive myiasis (6).

Types of myiasis occur mostly in tropical and subtropical regions, although it is not limited to these regions and is reported more or less in regions with different climates (7). In general, myiasis is seen in people who have a weaker economic and social status and have a lower level of health, as well as in patients with a weak immune system or with mental disorders more than other people (8).

Obligatory myiasis is classified into different types of cutaneous, subcutaneous, respiratory, nasopharyngeal, ocular, ear, digestive (gastric, intestine and rectal) and finally urogenital myiasis based on the location and placement of the pathogenic larva in the host's body. Cutaneous myiasis is the most common form and the urogenital form is the rarest and most unusual form in humans, which can be observed even in men with a much lower probability than in women (7, 9, 10).

Larvae of the three families Oesteridae, Sarcophagidae and Calliphoridae from the fly group can cause myiasis. The members of the family Oesteridae are known as Warble flies. The genera of the *Sarcophagidae*, which include *Sarcophaga* sp. and *Wohlfahartia* sp., lay eggs in excreta, carcasses and decaying organic matter and cause meat myiasis in livestock. From the Calliphoridae family, four genera *Calliphora* sp., *Lucilia* sp., *Chrysomya* sp. and *Coccliomia* sp. are involved in causing myiasis, of which, *C. bezziana* and *C. homoneurax* are the agents of obligatory myiasis and the rest of the species are the agents of facultative myiasis (11).

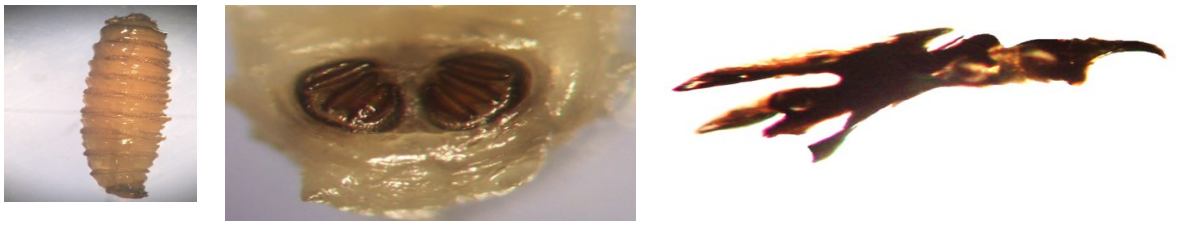
Case Report

The patient was a 5-year-old boy living in the suburbs of Bushehr City, located in the southwest of Iran, who referred to the Children's Clinic of Persian Gulf Hospital in Bushehr due to persistent fever and significant weight loss.

In the history obtained from the patient, white larvae had been observed in his urine since about 6 months ago, which unfortunately, enterobiasis was wrongly diagnosed at first. He was treated with antiparasitic treatment, but there was no improvement and the patient's clinical symptoms continued.

With more detailed investigations in the current visit and after it was determined that active and live larvae are present in the urine of the patient, the urine sample was collected and transferred to the parasitology laboratory of the Faculty of Medicine.

After preparing the larvae and microscopic evaluation, the presence of myiasis-causing fly larvae was confirmed. To determine the exact species, a number of larvae were evaluated more precisely based on specific diagnostic keys after preparing cross-sections. Investigations showed that the larvae causing urogenital myiasis belonging to *C. bezziana* (Fig. 1)



A B C

Fig. 1: *Chrysomya bezziana* in the third stage of larvae (125×). A: Posterior spiracle of *C. bezziana* in the third stage of larvae (125×), B: Cephalopharyngeal skeleton of *C. bezziana* in the third larval stage (125×), c: (Original photos)

Discussion

Urogenital form of myiasis, unlike other forms of the disease, is considered the most uncommon type in humans due to clothing protection and the lack of access of flies to the genital area, and even in men, due to the physiological characteristics of the genital system, it may be seen with a much lower probability than in women. But in case of non-observance of personal hygiene standards, especially during defecation and urination, this possibility will always exist in both sexes (9, 10).

Isolation, diagnosis and identification of the species of larvae that cause myiasis is very necessary for the treatment of patients. The points that are considered in the identification of larvae species are their morphological characteristics; such as body shape, protrusions, posterior part of spiracle (position of openings and their structure), body coloration, dorsal trachea, anterior spiracle and cephalopharyngeal skeleton (11).

In the present report, *C. bezziana* was identified as the causative species of urogenital myiasis in this patient. The genus *Chrysomya* sp., plus three other genera *Calliphora* sp., *Lucilia* sp. and *Cochliomyia* sp., belong to the Calliphoridae family of flies that can cause myiasis.

C. bezziana, also known as the old world screw-worm fly (12), is found throughout Africa and most parts of Asia, including Iran and in recent years, it has caused a lot of damage to livestock in the southern, southwestern and western regions of the country, and there are also reports of human myiasis. Adult insects are 8 to 12 mm long and metallic green, blue-green to blue-purple in color. Fertile female insects lay their eggs in clutches of 150 to 200 and sometimes more in superficial wounds or mucous membranes of organs such as genitals. Sometimes, myiasis occurs in the eyes or ears, and by destroying the tissue structure of these organs, it causes blindness or deafness in the sufferers.

In a research, larvae of *C. bezziana* were isolated as the causative agent of cutaneous myiasis from the temporal-occipital lesion on the left side of a 56-year-old rural patient from Arak in the center of Iran (13). In another case report in Zanjan city, located in the northwest of Iran, related to an 18-year-old young man with urogenital myiasis, additional studies on collected larvae identified the species as *Megaselia scalaris* (14). Another similar case report from Kashan City located in the central part of Iran, the patient was a 26-year-old woman with urinary-genital symptoms, which after collecting urine and observing live and active larvae by researchers, the causative agent was determined to be *Psychoda* sp. (15). Ramalingam et al. reported a case of genitourinary myiasis in a 76-year-old man with rectal carcinoma, which was caused by *C.* larvae (16). In another study, two cases of *C. bezziana* (Diptera: Calliphoridae) was identified as the agent of myiasis in 18- and 87-year-old men in two different regions in Fars Province, southern Iran (17). In the study of Baranji et al., a case of secondary Ophthalmo myiasis caused by *C. bezziana* was reported (18). In the study of Soleimani-Ahmadi et al., a case of wound myiasis in a 3-year-old pharyngostomized girl was reported who referred to the Pediatric Hospital in Bandar Abbas for pharyngological follow-up. During the examination, several live and mobile larvae were removed from the lesion. The specimens were identified as *C. bezziana* according to the morphological characters of fully-grown larvae (19).

In a review article, all the case reports related to human myiasis in Iran between 2013 and 2020 were collected. A total of 26 types of human myiasis were reported in the above-mentioned time period, and the most reported cases were related to oral myiasis, followed by ocular and digestive myiasis. Only two cases of urogenital myiasis were reported in this time frame and interestingly, in none of the two mentioned cases, the causative agent was *C. bezziana*, and other species of other flies

that cause myiasis were the cause of disease (20).

Therefore, it can be acknowledged that the present report is the first case of urogenital myiasis caused by *C. bezziana* in Iran.

Conclusion

By comparing the results of the current report and other available reports, it can be concluded that the larvae of several species of myiasis-producing flies can attack the urinary-genital system of people and cause urogenital symptoms. Therefore, it is necessary to diagnose and accurately identify the species of larvae that cause myiasis in order to properly treat affected patients. It is better that the physicians of endemic areas have a complete understanding of the infection, symptoms and treatment of all types of myiasis, in order to avoid misdiagnosis and wrong treatment in cases of exposure. Also, the role of improving the environment as the best and most effective method to control the population of disease-causing flies should be taken into consideration by health system practitioners.

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Conflict of Interest

Non-declared.

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