INTRODUCTION

Myiasis is a parasitic disease of humans and other vertebrate animals, caused by dipterous larvae. The condition has been studied widely in humans, farm animals, and pets. In humans, the disease manifests itself in various forms depending on the site of tissue infestation by larvae such as ocular, nasopharyngeal, oral and urinogenital myiasis. Most of these forms are usually associated with poor general health and hygiene. Larvae of more than 50 fly species are implicated in myiasis. Important species include Chrysomya bezziana, Chrysomya megacephala, Chrysomya rufifacies and Lucilia sericata; all being reported from Pakistan. This study describes the first report of human myiasis by Chrysomya bezziana from Peshawar, Pakistan.

CASE REPORT

A case of urinogenital myiasis in a 5-year old female child was brought to the attention of doctors at Khyber Teaching Hospital, Peshawar in 2009. The patient belonged to a poor family living under unhygienic conditions. The patient was referred to the gynaecology OPD. She presented with signs and symptoms of a urinary tract infection. She complained of a dull lower abdominal pain, vaginal itching and severe pain, dysuria, burning micturition and increased frequency. Her parents also gave history of nocturnal enuresis, and that 5 larvae were found on the bed in the morning. The larvae were sent by the inquisitive family to the Department of Zoology, University of Peshawar, following instructions of the concerned doctor. The specimens were immediately identified as screw worms (Phylum: Arthropoda, Class: Insecta, Order: Diptera, Family: Calliphoridae, sub-family Chrysomyiinae, Genus: Chrysomya) and the doctor was informed.

Examination of the urinogenital tract showed no further infestation and superficial ulcers with a mild purulent ulcer slough. The wound was cleaned and disinfected, it did not require major debridement. Three consecutive follow-up examinations of the patient, one after a fortnight and the other two after a month's interval, showed rapid healing and no signs of worm infestation. The parents were strictly advised to keep the wound covered in order to prevent access of gravid female flies and recurrence of condition. Possibility of a secondary urinary tract infection was ruled out by urine examination.

The larval specimens were kept in 70% alcohol at Zoology Department. Specific identification of species was performed in December 2014 using larval taxonomic keys. For scanning electron microscopic (SEM) observations, previously described protocol was used.

Larvae were identified as the obligatory parasitic screw worm species Chrysomya bezziana. Each larva was dirty white in color and about 6 - 7 mm in length. The body was smooth without any fleshy processes protruding out. The posterior spiracles had an open peritreme with three slits, revealing that the larvae were full grown third instars (Figure 1a). The anterior spiracle had 5 papillae (Figure 1b), which is a species diagnostic feature of Chrysomya bezziana.

Figure 1: (a) Light micrograph of third instar larva of C. bezziana. Caudal view of contiguous posterior spiracles displaying three slits each. (b) Scanning electron micrograph of anterior spiracle of a third instar Chrysomya bezziana.
DISCUSSION

Chrysomya bezziana, known as old world screw worm, is an obligate parasitic species infesting host wounds during its larval stages. It is a blow fly belonging to family Calliphoridae, Order Diptera (Class Insecta). Blow flies are a nuisance, like their more known relatives, the house flies. A major risk factor in acquiring myiasis is poor hygiene. The patient suffering from myiasis in our case had personal hygiene issues. She came from an area of Badaber with poor sanitation and high fly populations.

The blow fly C. bezziana starts its life cycle by finding suitable host. It lays eggs on dry edges of wounds, depositing several layers of egg masses. Eggs hatch in 10.5 hours at 37°C, after which, the first-instar larvae emerge and migrate to the nearby wound. The larvae feed on wound fluids and then moult into the second instars approximately 24 hours later, burrowing deeper into the tissues of the host, with their heads buried in the wound and their caudal segments exposing the posterior spiracles. After a further 24 hours, the larvae mould into the final third instar during which most of the larval growth takes place. When mature, the full-fed larvae wriggle out from the wound and drop to the ground for the purpose of pupation. Most larval exodus from hosts (89%) occurs during the hours of darkness. Adult fly emergence from the pupal case is the next step in the life-cycle.

In the present case, the patient wetted her bed frequently. During such an episode, post-feeding third instar larvae passed out via urine (bed-wetting by the child) and were subsequently collected in the morning by the parents.

Chrysomya bezziana is an important agent of wound myiasis throughout the Indian subcontinent. Many other blow fly species, globally implicated in myiasis, have also been reported from Pakistan. Some of these species have been a focus of molecular studies as well. Unfortunately larval stages of those species particularly involved in human myiasis have seldom being investigated and reported in medical literature. Two studies, one describing urinogenital myiasis by black blow-fly Phormia regina, and another detailing ophthalmic myiasis by sheep bot fly Oestrus ovis, have previously been reported from Karachi, Pakistan.

This is the first study reporting C. bezziana myiasis in humans from Peshawar, Pakistan. Further studies are required to gain insight about the prevalence of this condition in Pakistan.

REFERENCES