Urinary Myiasis in a Nigerian Child: A Case Report and Review of the Literature

***Gbenga Akinyosoye, *Motunrayo Adekunle, *Omotola Ajayi, *Olubukola Ransome-Kuti, *Amontunur Lamina,**

Department of Paediatrics, Lagos State University Teaching Hospital Ikeja, Lagos, Nigeria

ABSTRACT

Myiasis is a parasitic disease caused by invasion of the body tissues of mammals such as man by larvae of developing Diptera flies. The larval stage is the feeding stage of an insect's development and may lead to considerable damage to the host tissues. This invasion may involve any of the host tissues. The urogenital tract is the least commonly affected as this body part is rarely exposed to the exterior, to flies, their eggs or larva. Certain unhygienic practices during urination or defecation as well as exposure to sites where flies lay their eggs may predispose to urinary myiasis. This case report documents a five-year-old Nigerian boy with urinary myiasis. We also highlight predisposing factors, clinical features as well as treatment options.

Keywords: Urinary Myiasis, Nigerian, Child, Lagos

INTRODUCTION

Myiasis is defined as "an infestation of a living vertebrate by developing larvae of Diptera fly which at least for a certain period, feed on the host's dead or living tissue, liquid body-substances or ingested food".[1] It is derived from the Greek word "mya" which means fly[2] and "aisis" which means "condition". The Diptera flies are a large family of two-winged flies (di-two, ptera-wing), also known as true flies. The larva of these flies can invade various parts of the body of mammals, including humans.[2] These larvae invade tissues such as the skin (cutaneous myiasis), the nasopharynx (nose, mouth, sinuses and ears), eyes, gastrointestinal tract, and urogenital system.[3] The human myiasis commonly affects open untreated wounds. However, intact skin and body orifice infestation with resultant malodorous discharge can also be seen.

Corresponding Author: Dr Gbenga Akinyosoye

Senior Registrar, Department of Paediatrics

Lagos State University Teaching Hospital Ikeja, Lagos, Nigeria

A number of flies have been implicated as the cause in humans, commonly *Dermatobia hominis*, *Cordylobia anthropophaga*[3] and Musca domestica (the common house fly).[2] Myasis has a worldwide occurrence and it is of particular health importance in the tropics. Urogenital myiasis occurs when the urinary tract, and / or the genital organs such as vaginal or penile orifices are infested with the fly larvae.[1] Urinary myiasis is however rare, with only few reported cases worldwide [1, 2]

CASE REPORT

A five-year-old school aged male child presented at the children emergency unit of the Lagos State University Teaching Hospital (LASUTH) on account of tenderness and swelling of the penis of 4 days duration. He had painful urination, forking of urine stream and creamy discharge from the urethral opening. He was irritable and in obvious painful distress. He fell while playing on an open grass area at home three days prior to the onset of symptoms. The patient had the habit of lying on the grass without his clothes on while playing with his peers. He lived with his parents and three older siblings in a room apartment with shared facilities, with nearby stagnant water and bushes in the environment. His father was a motorcycle driver and his mother a petty trader. Both parents' highest level of education was at the primary level. The family laundry was sun-dried on the open grass, and worn without ironing. The child had received analgesics and antibiotics. The child presented children emergency unit when the symptoms did not resolve with treatment.

Physical examination revealed a boy in obvious painful distress with a circumferential swelling of the penile shaft, which was hyperaemic. Differential warmth and tenderness were elicited. Small cream-coloured live larva was seen at the urethral meatus. It was gently extracted and it measured about 1cm by 0.5cm in its widest diameter. No bleeding or discharge was noted. The patient was immediately relieved of pain as soon as the larva was removed.

Subsequently, urinalysis, urine microscopy, culture and sensitivity were requested, while a review by the parasitology unit was sought. However, his mother demanded for his discharge against medical advice before the unit could review. He went home on oral Acetaminophen and Albendazole. Results of urinalysis and culture done were essentially normal. The mother was contacted on phone and she expressed complete resolution of the symptoms after two weeks. She was also counselled on the risk factors leading to the condition and healthy practices to prevent a recurrence.

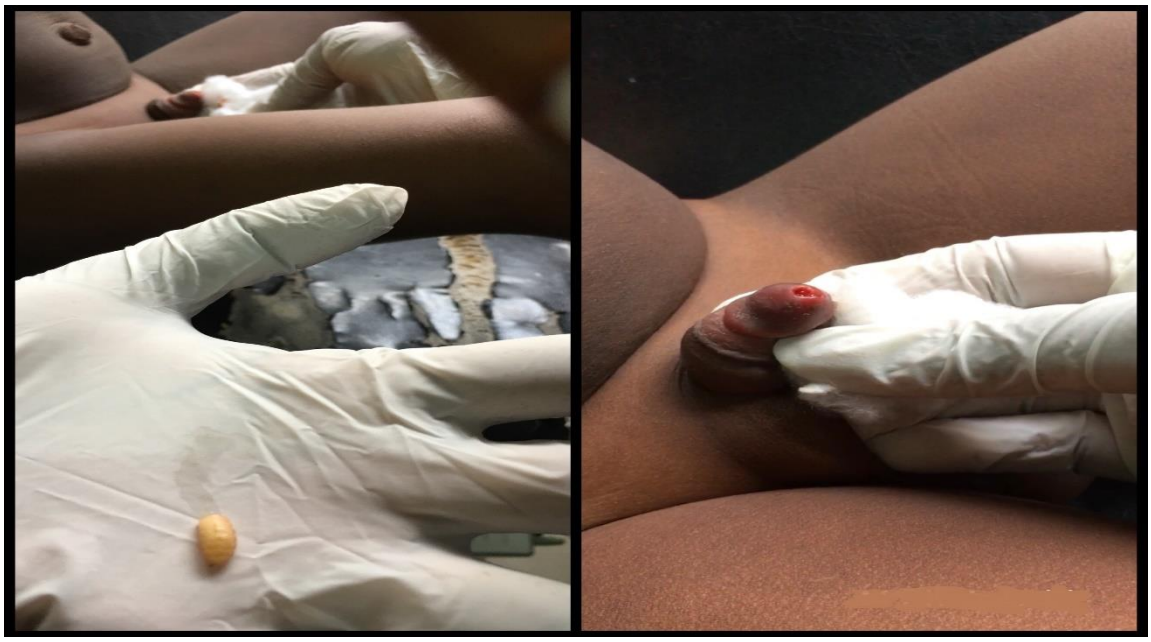

Figure 1: Expelled worm (left) and the urethral meatal opening (right) where the worm was expelled from.

DISCUSSION

Myiasis is a disease of economic importance. It is a major cause of agricultural losses in animal husbandry which leads to significant morbidity, and may cause mortality in man.[1]

The parasites implicated in urinary myiasis can be grouped into three: obligate parasites who require living tissue for larval development; facultative parasites whose larvae usually develop on carrion but may invade wounds;9 and accidental myiasis producers whose eggs or larvae are accidentally ingested and not killed in the intestine.[3] The Diptera flies are a large order of about 150,000 species of flies. The most important species are the Muscoidea, Oestroidea, Calliphoridae, and Sarcophagidae that cause human myiasis.[2]

Dermatobia hominis (of the family Oestroidea) is widely distributed in both South and Central America. The adult fly usually lays its eggs, enclosed in a form of cement, on the surface of foliage or thorax of certain insects, such as day - flying mosquitoes and flies. These insects may transfer the eggs to the skin of humans or other new animal hosts who aid in their transport until a suitable host is found. The larva hatches from the egg when it senses warmth and is capable of penetrating the human skin within a further 5–10 minutes.[3] Other common causes of urinary myiasis are larva of *Cordylobia anthropophaga* , *Fannia scalaris*, *Musca*, *Sacophagia*, *lucilia*, *Wohlfahrtia* or *Calliphora*; other less implicated causes are larva of *Eristalis*, *Pschoda and Megaselia* flies.

There is no reported age nor sex preponderance on urinary myiasis in the literature; however, cases reported have ages within the range of 2 to 21 years.[4,5] Other forms of Myiasis (commonest being cutaneous), have been reported in as young as the neonatal life[6,7] and well into the tenth decade of life.[8] Predisposing factors in children include the use of recycled diapers;

that were sun-dried and re-used, sun drying clothes, including underwear on the ground or grass, contaminated or infected umbilical stumps or wounds.[8,9] Unhygienic circumcision and sitting bare bottomed on the soil have also been implicated.[9] Occurrence of urinary myiasis have also been found to be associated with low socio-economic status, unsanitary conditions, immunodeficiency states, poor hygiene, urinary tract defects and those with mental or physical impairment.[10] Urinary myasis appears to be under reported worldwide with the few reports majorly from the tropics and subtropical regions.[9] This case was therefore reported to create an awareness of its occurrence in children and the need for a high index of suspicion among health care workers.

Utsalo *et al*[11] reported a 21-year-old adult male with urinary myiasis presenting with recurrent urinary tract infection and repeated hospital visits until urinary myiasis was diagnosed and treated. Ogbalu *et al*[6] reported penile myiasis in 8 neonates in Bayelsa State; this reveals it can occur early in life. Urinary myiasis generally presents with pain on micturition, haematuria, irritability and urinary tract obstruction. It is rare especially in children with very few data on its occurrence. Early diagnosis of urinary myiasis especially as a cause of urinary tract infection cannot be over emphasized as recurrent urinary tract infection may ultimately lead to the development of chronic kidney disease a fatal complication.[11]

In Nigeria, *Cordylobia anthropophagia* otherwise known as tumbu fly is said to be an important cause of myasis in children.[8] The index case reported has some risk factors identified which could have contributed to the larva infestation such as: poor hygiene, low socio-economic status and lack of proper sanitation measures. Oluwatosin et al[4] in Oyo state observed that the increased risk of infestation in children is due to frequent contamination of their dresses, uncovered bodies and playing with urine and faeces. Our patient had a history of spreading clothes on grass without ironing before wearing. This however is at variance to the case reported by Dogan et al[12] of a 10-year-old female who presented with similar symptoms with this case but had no risk factor identified.

Common presentations of urinary myiasis as reported by Utsalo et al([11] are painful micturition, penile swelling and urethral discharge which were seen in this case. It was obvious that the care giver was oblivious to such condition and the role of poor hygienic practices in its occurrence. A clinical diagnosis of myiasis can be made based

on the morphology of the worm which was the case in this index patient as mother insisted on going home with the expelled worm. However, a definitive diagnosis involving a parasitological classification remains the gold standard.[9] Myiasis is majorly self-limiting only leading to minimal morbidity. Management is majorly supportive with analgesics and psychological support as there is no documented standard mode of treatment. The condition tends to resolve once the larva has come out or has been removed. Patients are also given anthelmintic such as ivermectin and antibiotics[10] this was given in this case. There have been several approaches to control of Myiasis for example, Dermatobia hominis has been controlled with insecticides including DDT and Toxaphene in Brazil.[2] Based on the knowledge that female flies mate only once, a control programme using male flies, sterilised by radiation, has successfully eradicated Dermatobia hominis in Cura¸cao[3]

CONCLUSION

Myiasis should be a strong consideration in our environment in a child with urinary symptoms especially among those with low socio-economic status and living in rural communities. It is a disease that can be prevented majorly with modifications in living conditions especially by ensuring clean and hygienic environment. Its rarity in developed countries as compared to developing countries like Nigeria reflects the link with low socioeconomic status and poor living conditions that are more commonly associated with people living in the developing countries. We recommend the need for health education and improvement of living condition in our sub-region.

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