

## An atypical presentation of cutaneous myiasis of the scalp in North Punjab:

### A case report

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#### Abstract

Myiasis is an ectoparasitic infestation caused by larvae of arthropods in the group Diptera. Cutaneous myiasis is the infection of skin and includes the following types: furuncular, migratory and wound myiasis. Out of all the organisms responsible for this disease, *Wohlfahrtia vigil* is the most common causative agent in Pakistan, usually seen from June to September with nearly all presentations occurring at a young age.

In our case, a patient without a history of trauma, skin erosion or animal exposure has a unique presentation of cutaneous myiasis. Here, an effort was made to treat a 15-year-old otherwise healthy female with a multisegmented treatment modality. A follow up visit was conducted every three days for three months at the end of which a 60% decrease in the size of the open wound was observed.

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#### Introduction

Myiasis is defined as the infestation of a vertebrate host by a fly larva that feeds on living tissue or body fluids. Cutaneous myiasis can be defined as larvae infecting the skin, which has rarely been reported in the subcontinent. However oral, nasal, aural, and ocular myiasis have been substantially reported.<sup>1</sup>

Myiasis commonly presents with travel associated dermatitis.<sup>1,2</sup> The causative organism is *Dermatobia Hominis* (human botfly).<sup>1</sup> Some cases caused by the tumbu fly in Asia and Saudi Arabia were also noted.<sup>3</sup> It often produces boil like lesions which are misdiagnosed as furuncles.

The female fly does not directly lay eggs in the vertebrae host. Initially, they infest blood feeding arthropods i.e., mosquitoes, which serve as a vector to transport the eggs to humans where they are hatched.<sup>2</sup> Eggs hatch and larvae enter the host either via a hair follicle, bite site or by directly

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burrowing into the skin where they live for 27-128 days and feed on the host's flesh.<sup>4</sup>

Initially, an erythematous papule with a central opening is formed, which resembles an insect bite and may enlarge. Serous discharge and larvae may also be visible. Associated symptoms include itching, movement sensation and sharp pain.<sup>5</sup>

In this case, we report an unusual presentation of cutaneous myiasis on the scalp of a 15-year-old healthy girl, with no history of travel or contact with animals. This case is of significance because cutaneous myiasis is not a commonly reported disease in Pakistan. Also, the presentation of this disease can be considered quite peculiar as there were no preceding signs and symptoms.

#### Case Report

A 15-year-old female, resident of Wagah border village, Lahore presented on the 28th of July 2021 to the dermatology outpatient department at Ghurki Trust & Teaching Hospital, Lahore. She complained of painless, spontaneous detachment of a patch of hair attached to the scalp skin at the posterior aspect of the head, two weeks earlier. A hollow open wound on the upper posterior aspect of the head was also present for the same duration. The patient was in her usual state of health two weeks before admission, when upon combing her hair, she noticed a patch of full-length hair with attached scalp skin



**Figure-1:** Ulcer with purulent discharge due to *Staphylococcus Aureus* infection: Swab for culture sensitivity can be seen.



**Figure-2:** Healing scalp ulcer with visible granulation tissue on edges and floor.

fall out. The detachment was painless with no associated bleeding or discharge and the skin patch was about 2x2cm in size. The patient had fatigue two weeks prior, without any associated symptoms such as fever, rigors, or chills. No other symptoms were noted.

On examination, the patient was well oriented to time, place, and surroundings. Pallor was noticed on her palms. Vitals were within normal range. Lymph nodes were not palpable. On close examination of the scalp, there was a shaved bald patch on the vertex surrounding an oval cavitory lesion with erythematous, smooth margins measuring 2x3 cm with a depth of 1.5 cm and the periosteum exposed. There was no blood, pus or granulation tissue seen and no insects visible at the base. The patient had already undergone wound debridement in another hospital. No previous medical record was available. No temperature difference between the lesion and the surrounding skin was seen. Systemic examination was insignificant.

Initially, the patient had undergone wound debridement to evacuate the crust and larvae in a tertiary care hospital, as reported by the accompanying parent. Afterwards, the treatment regimen of the patient consisted of daily wound irrigation with normal saline solution and redressing the open wound with sterile gauze and a clean new crepe bandage. The patient was taking self-prescribed medication which included Tramadol. These medications were stopped, and a culture sensitivity test was carried out. Staphylococcus Aureus infection was detected, which was treated with a course of co-amoxiclav 625 mg daily for ten days. Later a culture sensitivity was conducted again. The second culture sensitivity investigation was negative for staphylococcus aureus and other known pathogens.

The growth of the granulation tissue as well as the edges was recorded by ulcer charting. Two points of identification

were noted for measurement purposes i.e., the right ear and left vertex prominence. Granulation tissue formation was also recorded.

Daily irrigation and dressing were recommended until the ulcer reached a size of 1 cm, at which point it needed to be surgically aligned and closed.

## Discussion

The existing literature on cutaneous myiasis outlines the standard patient prototype which consists of a triad of poor hygiene, low socioeconomic background, and animal exposure.<sup>4</sup> Our patient presented to us with good hygiene. On inspection, there were no signs of poor living conditions. The patient does not have any pets and there was no record of stray animals in the patient's surroundings.

Another feature of our case that makes it an outlier in related literature is its geographical location. Myiasis is a disease indigenous to the North African and South American regions.<sup>6</sup> There is no database defining the frequency of myiasis in the subcontinent.

Literature has indicated that myiasis can be correlated with psychiatric disturbances, which can be a risk factor.<sup>2</sup> However, this contrasts with our patient, as she underwent a thorough psychiatric evaluation and the outcome resulted in no deficits in her mental or cognitive functions. Neurologic causes were not explored further as the systemic investigation findings were insignificant and neurologic pain had not been reported by the patient initially or in follow-up.

An inconsistency which has led to confusion in the study is the entry site of the larva. The existing theory of entry of the mite through the nasopharyngeal cavity and ear does not apply to our patient.<sup>7</sup> Her palate was also checked for signs of entry; however, no serpiginous routes were found. Our theory is direct inoculation of the scalp skin by an arthropod bite.

Additionally, there was no boil like lesion formation, no serosanguineous discharge and no sensation of movement of mites; all of which are features typical of cutaneous myiasis.<sup>8</sup> Furthermore, the exact cause of the painless detachment initially reported by the patient could not be determined. The detachment was noted while the patient was combing her hair. A theory that could be extracted from the initial scenario is that the cause of the painless detachment could have been due to the movement of the hairbrush against the scalp.

Our case report is significant as it records an atypical presentation of an under-reported disease.

## Conclusion

In summary, the patient was successfully treated for cutaneous myiasis of the scalp with regular evaluation and follow-up. The lesion was treated with daily irrigation and dressing. Broad spectrum antibiotics were also given for secondary bacterial infection. The lesion was then approximated and sutured by the surgical department. Due to proximity with the brain, it can be noted that cutaneous myiasis of the ear, oral cavity and the scalp need to be treated as soon as possible to prevent brain tissue damage. Timely removal of larvae and irrigation of the area can prevent consequential side effects and co-morbidities in patients.

**Consent Form:** Informed consent was taken from the patient prior to the manuscript's submission.

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**Conflict of interest:** None.

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