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Case Report

A case on novel treatment protocol for difficult to treat foot myiasis

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ABSTRACT

Foot myiasis is a rare condition, with only a few reported cases and no treatment consensus. We proposed a conservative and unique treatment approach with VAC dressing method. The patient administered in the hospital with presentation of deep tissue injury from a sharp stone, from 3 months back which was maggot infested. The patient had approached local physicians before been admitted in our facility. The wound was severe with maggot infestation. The patient was non diabetic with no other comorbid conditions. We had the aim of infection free wound with faster rate of healing, which was fulfilled by the novel treatment protocol using vacuum-assisted closure (VAC®) dressing method. Culture sensitivity tests ruled out infection and maggot infestation. The wound was closed surgically after healthy uninfected granulation tissue confirmed with culture sensitivity report. No recurrence of maggot or any other infection were found. The protocol performed was safe and effective in critical case of myiasis.

Keywords: Foot myiasis, VAC® dressing method, Maggot infestation, Wound healing

INTRODUCTION

Myiasis is a parasitic infestation of live human or vertebrate animal tissues by dipterous larvae of nonbiting flies, which feed on host tissues or fluids.[1] Human myiasis has a worldwide distribution, with involvement of more species and greater abundance in tropical and subtropical countries. In countries where it is not endemic, myiasis is a relevant condition and is the fourth most common travel-associated skin disease.[2] Myiasis is usually among the 5 most common dermatologic conditions, accounting for 7.3% to 11% of cases.[3,4]

Eyes and ears are the most common location for the infestation because of access, size of the orifice, and decreased sensitivity of the mucosa. Uriarte reported the nose myiasis case. The maggots, white and 20 mm long, were isolated from the patient nose and identified as second instar larvae of *Oestrus ovis*.[5,6]

Castellani et al in 1919 described the condition of nasal myiasis, known as Peenash in India, due to chrysomia (formerly pycnosoma).[6]

Table 1: Anatomical classification of myiasis.[3]

Classification by Zumpt	Classification by Bishopp	Classification by James
Sanguinivorous	Bloodsucking	Bloodsucking
Dermal/ subdermal	Tissue-destroying subdermal migratory	Furuncular, Creeping, Traumatic/ wound, Anal/vaginal
Nasopharyngeal	Infestation of the head passages	Nose, mouth, sinuses, Aural Ocular
Intestinal	Intestinal/ urogenital	Enteric Anal/vaginal
Urogenital	Intestinal/ urogenital	Bladder, urinary passages Anal/vaginal

Nasal myiasis is common in developing countries where sanitation is a problem.[7] Nasal myiasis is a nasal

infestation caused by house fly larvae (maggots). It is a common clinical entity in tropical countries and is an opportunistic parasitic infestation of human being and also some animals. The nasal myiasis is commonly seen among low socioeconomic status, mental retarded person, immunocompromised patients, chronic sinonasal diseases, and unhygienic living status. Myiasis can occur at any tissues, organs and body cavities of human being or animals when it is invaded and infested by the larval of nonbiting flies of the order Diptera.[8] The larva that cause myiasis can act as parasites in the nose, ears, eyes, skin, mouth, soft tissue, urogenital tract, stomach and intestine.[9] Nasal myiasis is prevalent more in developing and tropical countries.[10]

Foot myiasis is uncommon and a rare condition with only a few reported cases and no consensus regarding its treatment. We reported a clinical case of patient who developed foot myiasis and discussed the clinical findings, treatment and outcomes. The patient who was a worker in a chemical factory came with infected and maggot infested wound in the right lower right limb. The wound was due to a trauma from a sharp stone. He had been visiting different healthcare centres and taken treatment with multiple times wound cleaning, local debridement and dressings. Initially the wound looked good but there was maggot recurrence after few days. Having been treated with antibiotics by other healthcare centres and closed dressing being done regularly, the prognosis was still bad, so we had two challenges which were control the progression of infection/infestation without recurrence and treatment with minimum economic burden on the patient.

The unique protocol was adopted in which the progression of infection was controlled and the maggot infestation was cleared along with deep tissue debridement and new tissue regeneration was promoted by VAC (vacuum assisted closure) dressing. VAC® therapy is a system which promotes open wound healing through the application of negative pressure (negative pressure wound therapy, NPWT), especially in infected tissues and non-healing ulcer. When applying pressure of -125 mmHg onto the bed of the wound and continued irrigation of wound with VAC for first 24 hours and then intermittent 30-minute break for every 4 hours continuously fluid material and infected debris is pulled out, formation of granulation tissue is promoted. VAC helps in removing slough material, infected remnant from maggots, promotes blood flow to the surrounding floor of wound which prevents bacterial lodging and acts as protective cover like antibiotics. Therefore, these mechanisms were effective in promoting the healing process which would be otherwise difficult to treat, leading not only to economic advantages, but sequential arrest of infections and healing granulation tissue formation.[11]

CASE REPORT

A 62-year-old patient had a trauma due to sharp stone injury in his toe 3 months back. The patient was brought with the complaint of a non-healing wound under my supervision. Patient had visited several healthcare centres for wound management but with no recovery. He experienced intense pain with discharge from his right foot during admission. On physical examination, it was found that the injury had active maggot infestation in the wound along with active pus discharge. A typical case of foot myiasis.

Patient had no history of hypertension and diabetes. On clinical examination of CBC, HIV, HBsAg, lipid profile, and thyroid profile and HbA1c was performed. Significant finding-patient had normal CBC, HbA1c levels and lipids were normal. Patient had no active viral infection. He also had 120/80 mmHg blood pressure.

Identifying the severity of the prognosis, the following steps were performed.

Step 1: Bedside maggot debridement was performed and the wound was cleaned with saline (Figure 1).

Figure 1: SVP wound cleaning in OPD.

Step 2: Patient was taken in the OT and maggot infestation was cleared with deep tissue debridement (Figure 2).

Figure 2: Patient in OT for deep tissue debridement and removal of dead debris and infected material.

Step 3: VAC® dressing protocol was used to cover the wound to prevent microbial load for first 24 hours and then intermittent 30-minute break for every 4 hours continuously fluid material is removed facilitating faster

healing. The machine used was the VAC Ulta™ with standard GranuFoam™ dressing (different sizes) which was usually changed every 48/72 hours (h). The wound was not surgically closed for 5 days (Figure 3).

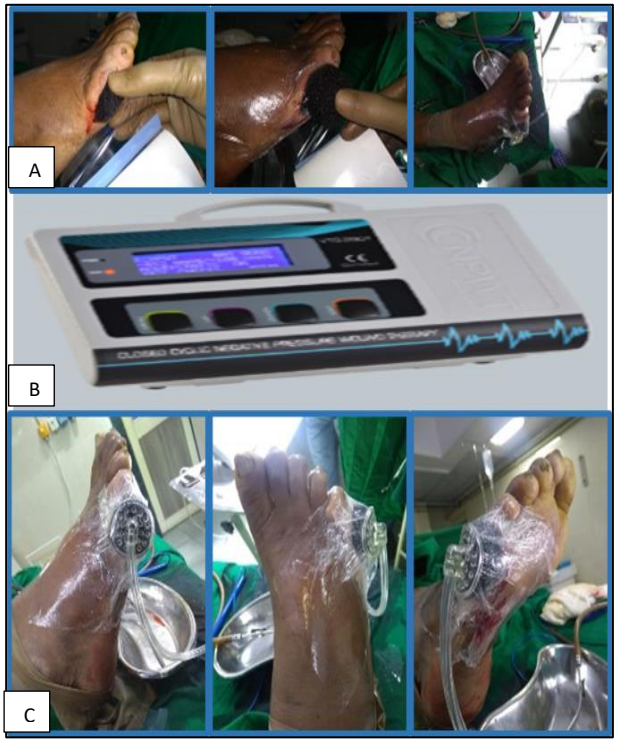

Figure 3 (A-C): Vacuum-assisted closure (VAC®) dressing protocol, top-dressing, left-NPWT machine.

Step 4: VAC dressing was removed after three days. Healthy tissue granulation was observed at the site of wound (Figure 4).

Figure 4: Tissue granulation at day three post VAC removal.

Culture sensitivity was performed to rule out infection and maggot infestation. When no infection and maggots were found and wound began to heal with healthy granulation tissues, the wound was closed surgically after 5 days (Figure 5). No maggot recurrence and any infection were found. The protocol performed was safe and effective in critical case of myiasis.

Figure 5: Post VAC recovery and surgical wound closure.

No recurrence of maggot was found and no sign of any poly-microbial infection was evident from the site of wound. Healthy granulation of tissues and non-recurrence of infection resulted in complete healing of wound. The protocol performed was safe and effective in critical case of myiasis.

Figure 6: Completely healed site of wound.

DISCUSSION

Myiasis results from an infestation by maggot larvae of various Diptera fly species. Myiasis is a common problem in the tropics but occurs rarely in temperate climates. Larvae of these flies usually feed on decomposing animal matter and therefore commonly infest necrotic tissue in humans. Most cases are found in underdeveloped countries or in patients with poor hygiene and unsanitary conditions, those who are predisposed to chronic infection or malignancy and those with poor access to healthcare.[2,4]

Currently there was no consensus regarding a treatment standard for foot myiasis and only a few cases have been reported.

The patient reported with pain, swelling and discharging wound. On examination of the wound, we found live maggots. Although the incident of injury due to trauma at the place of wound was three months old, but no surgical treatment was taken. The wound was 1 cm bone deep, which was badly contaminated and infected. Hence to treat this case the major points of concern for us were polymicrobial infection, maggot infestation, threat of

recurrence, healing time, cost of treatment and debility. This new treatment protocol of preventing infection and infestation with VAC dressing helped to clean the wound. Further we had kept the wound open with VAC for 5 days without closure to promote tissue regeneration and faster wound healing. The wound was closed surgically after confirming the absence of microbial pathogen load through culture tests.

This new treatment protocol of treating infected foot myiasis lead to the following advantages such as prevention of recurrence, healthy granulation tissue with faster healing, reduced frequency of dressing required, lesser period of hospitalisation/OPD follow up, cost effective therapy as it is single setting procedure and prevention from amputation. The healing of the wound was accelerated due to tissue regeneration at the infected site, which was the focus point of the protocol.

CONCLUSION

The patient with difficult to treat foot myiasis by maggot infestation was treated with VAC® dressing method and completed recovery of wound was found with no infection and maggot recurrence during the follow-up. The patient was satisfied with the treatment. This treatment protocol could be further explored and applied in the management of myiasis.

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