




## CASE REPORT

# Atypical neonatal cutaneous myiasis: A diagnostic challenge mimicking pustular rash in a resource-limited setting

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## Key Clinical Message

Neonatal cutaneous myiasis is a rare disease in newborns. Although it is unlikely, the level of suspicion for this condition should be high, especially in tropical regions. Treatment may deviate from the standard approach when necessary, and chemical debridement can be considered, particularly for smaller lesions. Ultimately, clinical judgment plays a key role in decision-making.

## Abstract

Myiasis is the infestation of the skin of a mammal by larvae or maggots. The skin is the most affected organ. However, it can also affect other organs of the body. *Gasterophilus* and *Hypoderma* are two flies that produce creeping myiasis, a type of cutaneous myiasis our patient had. The infestation is common in Sub-Saharan Africa and most especially among rural dwellers. We report on a case of a 7-day-old term neonate who reported to St. Mary's Hospital Lacor, a Private-not-for-Profit hospital situated in the Northern region of Uganda, who was admitted as a case of neonatal sepsis with a focus on the skin initially, however, while on the ward was eventually diagnosed with Cutaneous Myiasis. The management plan included chemical debridement with Hydrogen peroxide, IV antibiotics, and other supportive therapies, and the neonate was ultimately discharged home after 9 days in the NICU. This case report aims to inform health-care workers of the importance of heightening the index of suspicion of myiasis for neonates who present with sudden-onset rash that can resemble pustules and be mistaken for a pustular rash. Additionally, chemical debridement, in this case, underscores the importance of an innovative approach to managing cutaneous myiasis in resource-limited settings. Mass education and awareness programs focusing on proper hygiene practices, safe handling of newborns, and early recognition of symptoms can help mitigate the risk of myiasis.

## KEYWORDS

chemical debridement, cutaneous myiasis, neonate, pustular rash, resource-limited setting

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## 1 | INTRODUCTION

Myiasis is a neglected tropical disease characterized by the invasion of dipteran larvae in both humans and animals.<sup>1</sup> This condition is widespread, with a higher prevalence in low-income countries in tropical regions around the world.<sup>2</sup> Myiasis has three subtypes; cutaneous myiasis seems to be the most common type. Scarcely does this happen in newborns, and even if it does, only a few larvae are removed.<sup>3</sup> Globally, the flies responsible for human infestations are typically *Dermatobia hominis* (human botfly) and *Cordylobia anthropophaga* (tumbu fly).<sup>4</sup> Cutaneous myiasis happens when these flies deposit their eggs directly on debris, wounds, and sometimes on clothing, touching human skin.<sup>3</sup>

In sub-Saharan Africa, cutaneous myiasis is the most common and typically affects adults and international travelers to the region.<sup>5</sup> There have been few reported cases of myiasis in adult tourists from Uganda,<sup>6</sup> and to the best of our knowledge, there are no reported cases in native Ugandans in the literature. In this case, we present the first reported case of neonatal cutaneous myiasis in Uganda.

## 2 | CASE PRESENTATION

We received a seven-day-old newborn assigned male at birth, delivered vaginally at a peripheral health center with a birth weight of 3.3 kg at 38 weeks, without any delivery or post-delivery complications. The newborn was brought in from home after developing a generalized skin rash for a week, eye discharge for 5 days, and later experiencing high-grade fever for 2 days. The newborn was able to breastfeed with no loose stools or associated vomiting. The mother attended antenatal care five times during pregnancy and received routine care. The baby was fully immunized at birth. They lived in a single-bedroom house with two other siblings and her partner. Everyone was in good health with no illnesses. The mother reported that many people in the village carried the baby around when she returned home with the baby.

Upon initial examination, the baby appeared irritable and had a temperature of 38.6°C. No cyanosis, dehydration, or pallor was observed. A generalized papulitic rash, described as pustular, was noted around the abdomen, trunk, groin, and scalp (Figure 1).

No apparent eye discharge was observed. The neonate exhibited all primitive reflexes, and other systemic findings were unremarkable.

## 3 | METHODS

A working diagnosis of neonatal skin sepsis was made, and the baby was initiated on intravenous ampicillin,



FIGURE 1 Represents the newborn admitted with a generalized skin rash around the abdomen, groin, and legs.



FIGURE 2 This depicts the creeping larvae from the scalp.

gentamicin, and tetracycline eye ointment and was isolated from other neonates. The differential diagnosis was late-onset neonatal sepsis, impetigo, and neonatal herpes simplex. Forty-eight hours after admission, the baby was still having fever, and we observed maggots creeping out of the lesions around the groin and scalp region (Figure 2).

After discussions with the clinical team, the diagnosis of cutaneous myiasis was updated. Due to the small and widespread bumps, the entire body had minor rashes infested with maggots, so we decided to perform chemical debridement. We used a mixture of hydrogen peroxide and chlorhexidine in a bowl of warm water in a ratio of 1:1 and gently washed off all the larvae using a gauze piece. About 50 larvae were removed from the neonate's skin. We did this for the next 2 days and then changed the antibiotic therapy to intravenous cefotaxime 50 mg/kg/dose and intravenous metronidazole 7.5 mg/kg/dose. Subsequently, the fever subsided on the third day of admission, and the neonate was less irritable.

Laboratory investigation performed on Day 2 of admission which revealed an elevated total white cell count of  $17.06 \times 10^9/L$  (3.50–9.50), neutrophilia of  $7.95 \times 10^9/L$  (1.80–6.30), lymphocytosis  $5.33 \times 10^9/L$  (1.10–3.20), monocytosis of  $2.85 \times 10^9/L$  (0.10–0.60), and hemoglobin 14.5 g/dL (11.5–17.5). Serum electrolytes were all normal,

and the blood culture yielded no results. The larvae were taken to the laboratory; however, we could not identify them using a microscope.

#### 4 | CONCLUSION AND RESULTS

On Day 7 of admission, the baby showed drastic improvement and was discharged on oral ampicillin-cloxacillin at 50 mg/kg/dose three times daily for 5 days and Vitamin D syrup 400 IU daily for 12 months (Figure 3).

A follow-up was done after 2 weeks, and the mother reported no complaints. On examination of the skin, the lesions were all gone, and the infant's skin had returned to normal.

#### 5 | DISCUSSION

The term “myiasis” originates from the Greek word “Myia” which means fly. This concept was first introduced by Hope in 1840.<sup>7</sup> It refers to the infestation of live humans and vertebrate animals by fly larvae (maggots) of the order Diptera (two-winged).<sup>8</sup> The classification of myiasis

is based on larvae location on the host body (dermal, subdermal, nasopharyngeal, internal organs, intestinal, and urogenital) or according to the type of host–parasite relationship (obligatory, facultative, or pseudomyiasis).<sup>9</sup>

Blowflies (Calliphoridae) and flesh flies (Sarcophagidae) cause myiasis of short duration by both obligatory and/or facultative parasites, which mature within 4–7 days, usually at the host's body orifices and in wounds (e.g., *Lucilia cuprina*, *Lucilia sericata*, *Cochliomyia hominivorax*, and *Wohlfahrtia magnifica*<sup>10</sup>). The genus of *Lucilia* blowflies are obligatory and/or facultative ectoparasites that belong to the Calliphoridae family and are found in meat and animal corpses. They cause myiasis in humans and domestic herbivorous animals. The Calliphoridae family is divided into two subfamilies, Calliphorinae and Chrysomya. The Calliphorinae contain *Lucilia*, *Calliphora*, *Cordylobia*, and *Auchmeromyia* genera. The adult *Lucilia* fly has a metallic-green or copper-green color with a diameter of 8–10 mm and is seen around butcher shops and slaughterhouses. Dermis and wounds are the most common sites of parasitism. Although they are usually known as sheep blowflies, they do not have host specificity. They are found worldwide. Their life cycle is 2 or 3 weeks, but it may be shorter in summer. The eggs transform into a conical larva between 8 and 12 h and complete peritreme of posterior respiratory spiracles. Larvae develop after 4–8 days and transform into adult flies after 6–14 days.<sup>11–13</sup>

Myiasis rarely occurs in newborns, primarily because this group is generally believed to be well-protected in all societies.<sup>3</sup> Bapat in India recorded an instance (involving the Calliphoridae family and *Calliphora* genus) of a baby abandoned in a garbage bin.<sup>14</sup> In tropical Africa, the infestation of *Cordylobia anthropophaga* has been reported to lead to myiasis.<sup>15</sup> Risk factors for acquiring myiasis include poor hygiene, environmental sanitation, and low socioeconomic status. The condition is prevalent in Nigeria throughout the year, with peaks during the rainy season.<sup>16</sup> In Uganda and East Africa, most cases of cutaneous myiasis have been documented in adults who are travelers and not neonates. A similar pediatric case of furuncular myiasis affecting the glans penis of an 11-year-old boy in Nigeria has been reported in the pediatric literature.<sup>17</sup>

Our case highlights several significant risk factors associated with rural living conditions, particularly in resource-limited settings. The baby's environment included a toilet near the main house, where the baby's clothes were often hung to dry and never ironed. Such practices likely facilitated exposure to fly larvae, as the toilet area can attract flies that may lay eggs on clothes. Additionally, the neonate was handled by many neighbors during the early days after birth, increasing the likelihood of contact with contaminated hands or environments. The parents, being peasant farmers, may not have had access



FIGURE 3 Represents the newborn's skin after chemical debridement.



to adequate hygiene facilities or health education, further compounding the risk.

Diagnosing cutaneous myiasis in neonates requires a high index of suspicion, particularly in endemic areas. Clinical diagnosis is paramount in resource-limited settings, where advanced diagnostic tools such as dermoscopy or laboratory facilities may not be available. Identifying larval movement or visually confirming the presence of larvae in the lesions can aid in diagnosis.<sup>18</sup> In this case, the atypical presentation as a pustular rash posed a significant diagnostic challenge, delaying appropriate treatment. In our patient's case, we could not trace the source of myiasis for the neonate and perform microscopic confirmation.

The cornerstone of managing neonatal cutaneous myiasis is the mechanical removal of larvae.<sup>18</sup> Several techniques can be employed, including the applying of occlusive agents like petroleum jelly or paraffin, which suffocate the larvae, making them easier to extract, applying of local antiseptics, and the administration of systemic antibiotics to combat secondary infections.<sup>14</sup> The neonate responded excellently to multiple baths with (hydrogen peroxide and chlorhexidine) diluted in the water and systemic antibiotics. This management approach was used due to the nature of the lesions on the neonate, which were difficult to extract individually since there were multiple lesions. This innovation demonstrates a practical and accessible treatment option. In settings where advanced medical interventions are unavailable, simple yet effective methods like chemical debridement can be crucial in managing and resolving infestations. Additionally, using intravenous antibiotics to prevent secondary infections and supportive care is instrumental in successfully treating these cases, as demonstrated in our neonate.

## 6 | CONCLUSION

Neonatal cutaneous myiasis is a challenging condition to diagnose and manage, particularly in resource-limited settings. This case underscores the importance of myiasis in diagnosing pustular rashes and other skin lesions in neonates. Enhancing clinical awareness, improving diagnostic capabilities, and implementing effective preventive measures are key to addressing this neglected condition. Education and awareness programs focusing on proper hygiene practices, safe handling of newborns, and early recognition of symptoms can help mitigate the risk of myiasis. Moreover, promoting innovative and resource-efficient treatment strategies such as chemical debridement can improve patient outcomes in resource-limited settings.

## AUTHOR CONTRIBUTIONS

**Doris A. Ekwem:** Conceptualization; writing – original draft; writing – review and editing. **Edwin Namara:** Writing – review and editing. **Eric Ssenuni:** Writing – review and editing. **Amanda Amuge:** Writing – review and editing. **Ronald Olum:** Supervision; writing – review and editing. **Venice Omona:** Supervision. **Ronald Okidi:** Supervision; writing – review and editing.

## FUNDING INFORMATION

This study received no specific funding.

## CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.

## DATA AVAILABILITY STATEMENT

Data sharing is not applicable to this article as no datasets were generated or analyzed during the current study.

## CONSENT

Written informed consent was obtained from the patient to publish this report in accordance with the journal's patient consent policy.

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**How to cite this article:** Ekwem DA, Namara E, Ssenuni E, et al. Atypical neonatal cutaneous myiasis: A diagnostic challenge mimicking pustular rash in a resource-limited setting. *Clin Case Rep*. 2024;12:e9528. doi:[10.1002/ccr3.9528](https://doi.org/10.1002/ccr3.9528)