

Neonatal myiasis: a case report

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Myiasis is a disease caused by fly larvae. Although adult cases have been reported, neonatal myiasis is a rare condition and there are few reports about this subject. In this article, we report a 12-day-old female neonate who was referred to us due to larvae in her eyes and ears. She was infected with *Lucilia* spp. larvae and was treated with proper antibiotics.

Key words: myiasis, aural, ocular, neonate, *Lucilia*.

Myiasis is defined as the invasion of live mammalian tissue by the larvae of dipteran flies for feeding on the host organs and body fluids. The fly may also drop its eggs while in flight on the skin, wounds or natural openings of an immobile person. Myiasis that produce larvae can affect cutaneous tissue, body cavities and body organs^{1,2}. The extent of the disease and host immune response depend on the fly species responsible for the disease, the host (e.g. species, concomitant disease) and the breeding conditions (e.g., environment)³.

Myiasis is a common parasitic infestation in the tropics and subtropics but it is also seen outside the endemic regions in Europe and North America¹. However, neonatal myiasis is a very rare clinical state that is almost always found in tropical areas⁴. Neonatal myiasis is briefly mentioned in only two or three pediatric textbooks, and only a few reports have been published in the literature about this condition⁵.

Herein, we report a 12-day-old female infant who was referred to us with aural and ocular myiasis and jaundice. We also determined that she had thyroid agenesis when evaluating for prolonged jaundice.

Case Report

A full-term female infant was born by spontaneous vaginal delivery in a hospital. Her birth weight was 3200 g. She had no medical

problem at or immediately after birth. She was admitted to a children's hospital due to increasing jaundice at 11 days of age. She was hospitalized at that hospital and on physical examination, she was found to have icterus accompanied by swelling and redness around her eyes. Her total serum bilirubin level was found to be high, at 21 mg/dl. She was given systemic antibiotic treatment, phototherapy and topical eye treatment for her sepsis, jaundice and conjunctivitis, respectively. On the second day of her admission, three 3-4 mm long larvae crawled out from her eyes bilaterally and her left ear. She also had hemorrhagic secretion in the external auditory canal. With these findings, she was referred to our hospital for evaluation and treatment. The patient was hospitalized in our Neonatal Care Unit and these larvae were sent to the laboratory of the Veterinary Faculty for analysis. When parents were asked the source of the disease, we learned that there was a butcher's shop near their house. There were no other myiasis cases reported from that region at that time. Therefore, myiasis may have originated from the butcher's shop and a fly dropped the eggs on her eyes and ears.

On admission to our hospital, she weighed 3500 g, her body temperature was 36.3°C, respirations were 40 and heart rate was 142 per minute. Swelling and redness were detected around her eyes bilaterally while her external auditory canal and tympanic membrane

seemed to be normal. She was found to be slightly hypotonic. Laboratory investigations revealed a white cell count of 14800/mm³ with 60% lymphocytes, 4% monocytes and 36% polymorphonuclear leukocytes. Her serum biochemistry, urine and cerebrospinal fluid (CSF) analysis were normal. Her bilirubin level was found to be 10.7 mg/dl total with direct bilirubin as 0.6 mg/dl. Red blood cell morphology was normal and Coombs' test was negative. Her reticulocyte count was 0.6%. Her C-reactive protein level was negative. Her immunoglobulin levels and lymphocyte subset were also normal. She was given intravenous ampicillin and gentamicin for sepsis and topical ciprofloxacin and neomycin was administered for her conjunctivitis. Figure 1 shows the redness and swelling around her eyes at admission.



Fig. 1. Swelling and redness around the eyes of the case at admission.

In our hospital, no other larvae were seen from either her eyes or ears. The redness and swelling around her eyes resolved during the treatment. The larvae analysis showed that the agent was a fly from the *Lucilia* genus. Her antibiotic therapy was stopped at the 10th day of therapy. Her blood, urinary and CSF cultures were negative. However, her bilirubin levels remained high, at 9.6 and 9.9 mg/dl, and indirect bilirubin was prominent. Thyroid function tests revealed highly elevated thyroid stimulating hormone (TSH) level of 851 mIU/ml (normal range: 0.35-4.94) and low levels of total T4, free T4, total T3 and free T3 levels (1.1 µg/dl, 0.40 ng/dl, 0.45 ng/ml, and 1.27 pg/ml, respectively; ranges: 4.87-11.72; 0.70-1.48; 0.60-1.80; 1.71-3.71, respectively). No thyroid tissue was seen by thyroid ultrasonography. Thyroid imaging

with technetium-99m showed the absence of Tc-99m uptake in the thyroid bed, confirming the diagnosis of thyroid agenesis.

After the confirmation of diagnosis of thyroid agenesis, thyroxin treatment was started. She was discharged after 10 days with thyroxin treatment and is now being followed by the Pediatric Endocrinology Division.

Discussion

Myiasis are infestations of humans and animals with larvae of diptera, which feed on dead or living host tissue for a variable period. 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)⁶. 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*, *Wohlfahrtia magnifica*)³.

The genus of *Lucilia* blowfly are obligatory and/or facultative ectoparasites that belong to *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 as *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 slaughter houses. Dermis and wounds are the most common sites of parasitism. Although they are usually known as sheep blowfly, 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 8-12 hours and complete peritreme of posterior respiratory spiracles. Larvae then develop after 4-8 days and transform into the adult fly after 6-14 days⁷⁻⁹.

Although any exposed human surface may be involved in myiasis, intact or damaged skin, eyes, nose, ears, brain, scalp, and urogenital tract can also be involved¹⁰. Myiasis occurs primarily in indigenous populations or in travellers to

endemic areas. Hypoesthesia or decreased consciousness, paralysis and immobility are the contributing factors that prevent the patient from fending off the fly once detected¹⁰. Myiasis is an extremely rare condition in infancy. Singh et al.¹¹ reported that 37.9% of the myiasis cases occurred in children in a series of 254 cases in India, and the youngest child was 11 months old. To date, there have been only a very few neonatal myiasis cases reported in the literature⁵.

In our case, the larvae were investigated in the Faculty of Veterinary Medicine and were diagnosed as a member of *Lucilia* genus blowflies^{7,8}. Figure 2 shows the macroscopic view of the larvae that crawled out of our patient's eyes. Although a few neonatal myiasis cases have been reported, four of the insects belonged to the Calliphoridae family and one of them was reported as *Lucilia sericata* in an extremely premature infant as nosocomial myiasis^{5,10}.

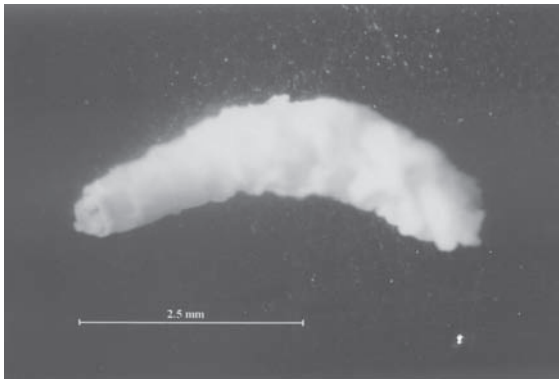


Fig. 2. The macroscopic view of the larvae (by Nikon SMZ 10 Stereo Zoom Microscope with 20x magnification).

Nasopharyngeal myiasis including aural and ocular myiasis involves invasion of the head cavities of the outer ear, nose, mouth and accessory sinuses. Infestations of the nose and ears are extremely dangerous because the larva may penetrate into the brain, and in these cases the fatality rate is reported as 8%. Myiasis may also be accompanied by inflammatory reactions and secondary bacterial infections, massive destruction and life-threatening consequences². The treatment of nasopharyngeal myiasis includes removing maggots and cleaning lesions with topical medications. Systemic antibiotics should also be given to these infants².

Ocular involvement accounts for 5% of all myiasis cases. It has almost always been found in debilitated and emaciated patients. Rural agricultural areas, crowded conditions and poor personal hygiene are the other predisposing factors for ophthalmomyiasis. Mechanical removal of maggots is an important step in the management of ocular myiasis¹².

Removal of maggots, use of local antiseptics, and systemic antibiotics for combating secondary infections have been recommended as treatment options in neonatal myiasis⁵. Our patient was given systemic and topical antibiotics and larvae were taken out in the first hospital. Her findings resolved with therapy and no adverse effects were seen. She is now 4 months old and is on thyroxine medication for congenital hypothyroidism.

Prolonged jaundice is one of the symptoms of congenital hypothyroidism and in our patient, it was due to thyroid agenesis. As mentioned before, hypoesthesia or decreased consciousness, paralysis and immobility are the risk factors that render patients prone to myiasis. Therefore, development of myiasis in our case may have been due to congenital hypothyroidism, as our patient had slight hypotonia.

In conclusion, we presented a case of neonatal myiasis and suggest that hypotonia might have been a risk factor in this case. Although aural and ocular myiasis can be dangerous because of the fatality risk due to penetration to the brain, they can be treated effectively in neonates with proper systemic and topical antibiotic therapies.

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