

Neonatal Myiasis

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ABSTRACT. This case involves an orphan female neonate—abandoned in a dustbin in Poona, India—who was infected by the larval forms of the blowfly. The blowfly causing this infestation belonged to the family Calliphoridae and genus *Calliphora*. The fly of this genus is of importance in Indian veterinary science and is found abundantly around decaying matter in Poona. The larvae occurring in carrion, flesh, etc, usually infest open wounds of animals and rarely infest humans. *Pediatrics* 2000;106(1). URL: <http://www.pediatrics.org/cgi/content/full/106/1/e6>; *Diptera, neonate, myiasis, blowfly, Calliphoridae, Calliphora*.

Myiasis is rare and the average practitioner of pediatrics is unlikely ever to see a case. The condition is mentioned only briefly in 2 of the 3 major American pediatric textbooks. A rare case of maggot infestation in a neonate is reported here.

CASE REPORT

A full-term neonate girl was picked up from a dustbin and brought by the local police to the neonatal intensive care unit of Sassoon General Hospitals in Poona, India. On admission, she weighed 3100 g and was approximately 38 weeks' gestation (by the Dubowitz scoring system) with no congenital anomalies. She was irritable, was crying continuously, and had a peculiar malodor. The core temperature was 35.5°C. The cord had fallen off but the umbilicus was wet. Her left ear had a purulent foul-smelling discharge. On cleaning with a cotton bud, a live 12-mm-long cylindrical white maggot was evacuated along with purulent discharge and debris. A few drops of turpentine oil were instilled in the ear to suffocate the existing maggots. Within 3 to 5 minutes, 7 10- to 13-mm white maggots crawled out of the ear cavity. A cotton plug sprayed with oil of turpentine was placed over the ear cavity. Twelve hours later, on removal of the cotton plug, five dead maggots, which had collected at the opening of the ear cavity (Fig 1), were dislodged. Ear examination revealed purulent debris, which filled the external auditory canal. The tympanic membrane could not be visualized.

Laboratory investigations disclosed a white cell count of 4800/mm³ and a band cell/neutrophil ratio of .23. Cerebrospinal fluid analysis was noncontributory. Bacterial cultures of the ear discharge revealed *Staphylococcus aureus*.

Tetanus toxoid was given and antibiotics were started. Antibiotic treatment consisted of 14 days of ampicillin, 100 mg/kg/day, and cefotaxime, 50 mg/kg/day. Soframycin ear drops were instilled after the chemical irritation subsided. Ear examination on the 14th day revealed a small healing perforation in the anteroinferior quadrant of the tympanic membrane.

The child was discharged on the 15th day and was sent to an orphanage where she was placed for adoption.

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DISCUSSION

Myiasis

The worm-like larval forms of various insects occasionally infest children through outdoor exposure, close animal contact, or ingestion of contaminated food. Flies (Diptera) of various kinds are almost always responsible for such parasitism, which is then known as myiasis and is diagnosed by finding living fly maggots in various parts of the human body. Typical larvae are cylindrical, whitish, segmented, legless, and headless, ranging in length from 1 to 30 mm.¹

Cutaneous Myiasis

Myiasis can begin after a breach in healthy skin by the larvae itself that produces furunculoid or migratory lesions, or it may arise in abrasions and wounds in which flies deposit eggs or larvae. Only 1 or few larvae are usually present in furunculoid or migratory lesions, whereas many larvae, sometimes of several species, commonly occur in abrasions and wounds.¹

Papular or furunculoid lesions, eventually opening at the summit through which the larva breathes and may be detected, are characteristics of the human or tropical bot (*Dermatobia hominis*) in the American tropics, and of the tumbu fly (*Cordylobia anthropophaga*) in Africa. Boil-like lesions occasionally can be caused by the primary screwworm, *Cochliomyia hominivorax*, throughout the New World; by cattle warbles, *Hypoderma* spp, which are worldwide although not indigenous in Africa; by flesh flies, *Wohlfahrtia* spp; and by various species of bot flies, which normally infest wild animals in temperate as well as tropical regions of the world.¹

Dermatobia glues its eggs to mosquitoes, flies, or ticks, and the larvae drop to the skin of man when these carriers alight. *Cordylobia* deposits eggs on soil, clothing, or bedding, and the larvae penetrate the skin after contacting the host. *Cochliomyia* deposits eggs directly on the skin, and *Hypoderma* on body hair. Open lesions can produce a serous discharge, but there is little pus unless secondary bacterial infection and abscess formation occur after the death or escape of the larva. The larva, when fully grown (15–30 mm long), leaves the host to pupate in the ground.¹

The larvae can be removed by slightly widening the already-present opening under local anesthetic and then gently squeezing out the maggot. Cleansing and the use of local antiseptics and antibiotics are indicated to combat secondary infection. Myiasis of the nose, mouth, ear, sinuses, anus, ectum, or vagi-

Fig 1. Maggots from the neonate's ear cavity.



na—like the foregoing—are caused by species of larvae introduced by flies attracted to lesions or odorous discharges. Infestation of the nasal passages and sinuses is accompanied by severe headache, fever, swelling, and purulent bloody discharge (peenach of India, bicherio of tropical America). Heavy infestations with screwworms can result in erosion of cartilage or bone of the head and occasional cases can be fatal. Migratory lesions, which occur infrequently, are of 2 types: itching serpentine red tunnels (one form of creeping eruption) caused by the young larvae of horse bots, *Gasterophilus* spp, which are worldwide in distribution; and painful subcutaneous evanescent cysts due to the deeply wandering larvae of cattle warbles, *Hypoderma* spp, which are found worldwide except in Africa, where they have occurred only in imported cattle.¹

The lesion of creeping eruption, commonly occurring on the arms, contains a single minute larva (about 1 mm) with transverse rows of spines, which may advance 1 or 2 cm a day. The larvae are acquired either from handling horses bearing the eggs on their hair or from eggs deposited by the fly directly on the hair of the patient's skin. The infestation terminates spontaneously, but may be treated by local freezing or by removal of the larva with a needle after applying machine oil to make the skin more transparent.¹

The usual recommended therapy is blocking the passages where the maggots reside with petroleum jelly, which deprives the maggots of oxygen. An

alternative is oil of turpentine, routinely used in many Indian veterinary hospitals.

Diptera are classified into 3 suborders—Nematocera, Brachycera, and Cyclorrhapha.² The fly that caused this infestation was a species of blowfly (order Diptera, suborder Cyclorrhapha, and family Calliphoridae). Duration of postembryonic development (egg to larval forms) varies from species to species. Deviations from the species norm can result from nutritional deficiencies, temperature, crowding, and the sex of the individual. Duration of development is about a week in warm weather for mosquitoes, flies, etc.³

In other reports of neonatal myiasis (Table 1), 3 species of blowfly (*Calliphora terraenovae*, *Protophormia terraenovae*, and *Phormia regina*) were collected from a human stillborn infant in Colorado.⁴ A report of nosocomial myiasis in an extremely premature infant in Israel was described by Amitay et al.⁵ The species of fly that caused this infestation was *Lucilia sericata* (sheep blowfly). Two other cases involving newborns have been reported, one caused by *Drosophila*.⁶ The other case, otic myiasis, was caused by Calliphoridae larvae of the genus *Phaenicia*.⁷

Reports of myiasis in older children include oral myiasis in children with cerebral palsy in Oman,⁸ cutaneous myiasis in Canada⁹ and Japan,¹⁰ and enteric myiasis in a 71-year-old man in Korea.¹¹ Maggot infestation of humans is now an uncommon problem because of improvements in living standards.

TABLE 1. Summary of Other Reports of Neonatal Myiasis

Reference	Age	Country	Classification and Phylogeny of Insects: Order Diptera (True Flies)	
			Family	Genus
4	Stillborn infant	USA	Calliphoridae	1. <i>Calliphora terraenovae</i> (Macqurat) 2. <i>Protophormia terraenovae</i> (Robineau Desvoidy) 3. <i>Phormia regina</i> (Meigen)
5	Extreme premature	Israel	Calliphoridae	<i>Lucilia sericata</i> .
6	Newborn	USA	Drosophilidae	<i>Drosophila</i>
7	Newborn	Cuba	Calliphoridae	<i>Phaenicia</i>
Current case	Neonate (approximately 1 wk old)	India	Calliphoridae	<i>Calliphora</i>

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