RECOVERY OF A SECOND INSTAR *GASTEROPHILUS* LARVA IN A HUMAN INFANT:
A CASE REPORT

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Abstract. We report a case in an infant of horse bot fly myiasis that was unusual because the maggot had developed to the second instar (of three potential instars). This represents the first report of such late development in a human. The case occurred in a rural area of the Pacific northwest (Washington) in late summer.

Human cutaneous myiasis caused by *Gasterophilus haemorrhoidalis* (Gasterophilidae: Diptera), a horse bot commonly known as the nose fly, has been reported on a few occasions. Larvae burrow just beneath the skin of human hosts producing a visible tortuous path and may cause severe itching.1,2 Previous reports end with removal of first-instar larvae, but second and third instars have not been reported on human hosts. This is probably because the first-instar larvae are either killed by scratching3 or removed before they can grow to the next instar. It is unknown if the larva could develop past the second instar in a cutaneous situation since the third (final) instar in the normal host, such as horses, completes its development in the gut.

CASE REPORT

The case was a male infant born in a small town (Naselle, Pacific County) in western Washington on September 5, 1996. Ranches and farms are located around the town, but not immediately next to the home. Coastal woodlands surround the area and rainfall is heavy, typical of the northwest coast. The mother first noticed a skin lesion on the left chest wall of the infant on September 28 that persisted through September 30. One or two days later a lesion appeared on the upper abdomen and the infant was brought to a pediatric clinic on October 8. A red papular lesion was observed, measuring 0.75 by 1 cm, and was somewhat tense with a small divot present on the top. Induration extended out about 1.5 cm in all directions and there was a faint pink ring around the perimeter 4–5 cm in diameter. A small incision was made to obtain material for analysis for bacterial infection. At the time, the lesion was scrubbed with povidone-iodine. A small amount of bloody transudate was seen following incision but there was no obvious purulent discharge. A gram stain was done but revealed no white blood cells or bacteria. The child was treated with cephalexin (62.5 mg twice a day) for possible bacterial infection. However, the culture showed no growth.

The following afternoon the mother of the infant noticed movement under the dressing of the incision and the infant was returned to the clinic where a small amount of tissue was noticed coming out of the lesion. Forceps were used to remove it and upon examination it appeared to be an insect larva. Once the larva was removed, the lesion on the infant healed and no further problems were noted. No other family members have had similar lesions. The larva was identified as a second-instar larva of *Gasterophilus haemorrhoidalis*. Identification was made at the Insect Identification Clinic, Department of Entomology, Oregon State University (Corvallis, OR).

DISCUSSION

The life cycle of *G. haemorrhoidalis* has been reported.3 In the study area, adult flies are flying and laying eggs from June to September and October. The eggs are deposited directly on a horse’s lips and hatch two days later. The first instar burrows subepithelially in the lips and after about 6–12 days will molt to the second instar. After a period spent in the tissues of the lips, the larva exits, is swallowed by the host, and molts to a third (final) instar in the gut lumen, to the wall of which it then attaches. Pupae often attach to the anus, thus the name *haemorrhoidalis*. The maggot may pass the winter as a third instar in the gut of the horse and pupate in spring. It seems unlikely that these fly larvae could find their way into the gut to complete their life cycle in human hosts. We do not know whether they could complete their life cycle subepithelially or, if in the gut of a human host, whether they could survive there.

The case appears to be the first report of development of a second instar *G. haemorrhoidalis* in a human host. Given that the host in our case was a newborn infant, two explanations are possible for this development. First, the immune status of the infant may still have been low and thus have allowed the larva to develop. Second, the physical inability of the newborn infant to defend itself, even through scratching, may have been an important contributor. The previous lack of reports of second instar larvae in older human hosts may simply reflect this factor. A previous case reported a probable second instar of *G. intestinalis* in an internal pulmonary lesion.4

The circumstances of this infestation are speculative. The area is rural and does have horses, but the family does not raise or handle horses. This report is interesting because most previous cases involved patients who directly handled horses and presumably were exposed to eggs/larvae from this activity. Therefore, the implication is that the infant was directly attacked by a fly while outside, and an egg deposited on his skin. Alternatively, but less likely since family members do not handle horses, it is possible that the egg was deposited on an adult who then transferred it to the child. Given that the fly is highly specific as to the site on which it will oviposit on a horse, namely the lips, the presence of an egg or larva on an exotic site such as an adult human being is puzzling. Furthermore, adult flies are large and noisy, and it is unlikely that adults would let one get near, while a newborn would be defenseless. Again, the physical
limitations of the infant may have played a role in egg-laying.

Two previous reports of serious ophthalmomyiasis apparently caused by first instar Gasterophilus were in a farm manager and a woman grooming horses. Most cases of Gasterophilus infestation that Zumpt reviewed seem related to the handling of animals, particularly after putting hands on the lips of a horse.

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