

Case Report

**Two Cases of Cutaneous Myiasis due to *Dermatobia hominis*
(Diptera, Cuterebridae) Imported into Japan**

SATOSHI SHINONAGA¹⁾, FUMIHIKO KAWAMOTO²⁾, SAHOKO MIZUNO²⁾,
ATSUSHI AKUTAGAWA³⁾ AND YOSHIRO HIRAOKA⁴⁾

¹⁾Department of Medical Zoology, Faculty of Medicine, Tokyo Medical and Dental University,
1-5-45, Yushima, Bunkyo-ku, Tokyo 113, Japan.

²⁾Department of Medical Zoology, Faculty of Medicine, Nagoya University, 65 Tsuruma, Showa-ku, Nagoya 466, Japan.

³⁾Yachiyo Hospital, 1-10-13 Touei-cho, Anjo-shi, Aichi 446, Japan.

⁴⁾Hiraoka Clinic, 7-37-2 Yurakucho, Handa-shi, Aichi 475, Japan.

(Accepted February 9, 1996)

Key words: Cutaneous myiasis; *Dermatobia hominis*; Imported cases; Japan.

We report two cases of cutaneous myiasis due to *Dermatobia hominis* (Linnaeus, Jr.) imported into Japan from Brasil. With increasing the population of Japanese Brazilian workers and international travelers, myiasis may be increased more frequently in our country. These are the fourteenth and fifteenth cases of myiasis found in Japan.

Case Report

Case 1.

A 1-year-old Japanese Brazilian boy who came to Japan from Taubate city, São Paulo State, Brasil where is about 100 km away from São Paulo city. He came to Yachiyo hospital in Anjo city in 9th October 1995. According to his mother, he infested with some kind of flies on his scalp 2 weeks ago in Brasil. On examination of his scalp, two small erythematous nodules with orifice parietal discharging seropurulent fluid were recognized on the occipital regions. Under local anaesthesia, one larva was removed from each lesion, respectively. The larvae were identified as the 2nd and 3rd instar larvae of human bot fly, *Dermatobia hominis* (Figs. 1, 3-6). Second instar larva is about 9 mm and 3rd

instar larva is about 10 mm in length. It is supposed that these larvae infested on his head 2 weeks ago when some kind of flies with human bot fly eggs were attracted to the body.

Case 2.

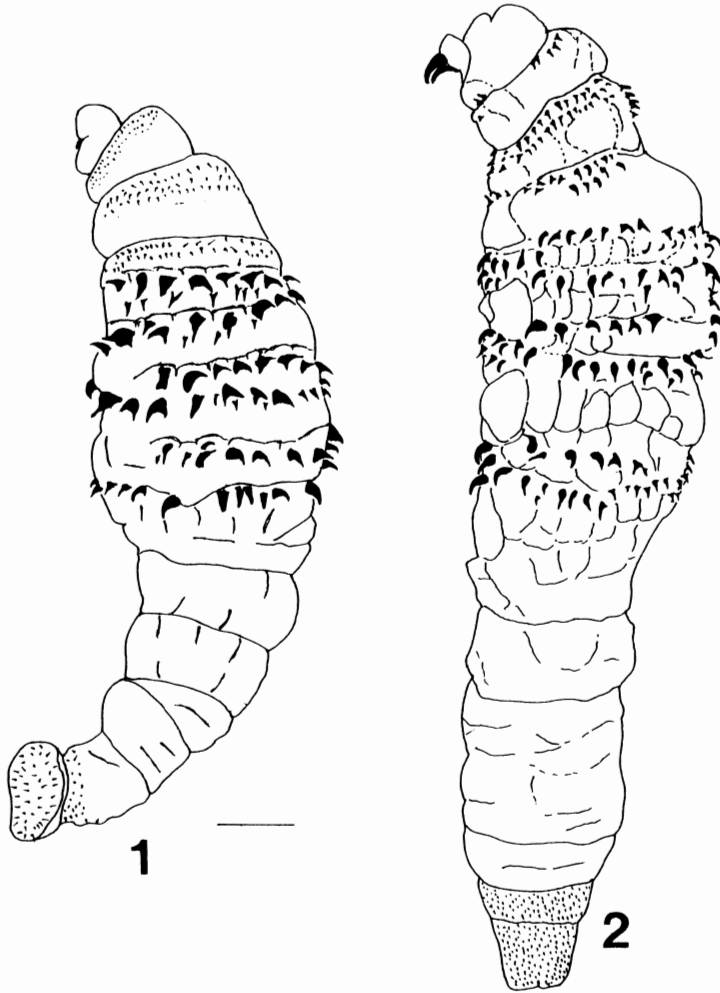
A 28-year-old Japanese Brazilian man who had came to Japan presented with a discharging papule on his left leg. He lived in Marilia, country side of São Paulo, Brasil and arrived Japan at the end of March in 1992. The patient noted itching and swelling on his left leg in March 27th. Next morning, he felt pain in the affected lesion and then visited Hiraoka clinic in Handa city. At the first medical examination, the affected lesion was swelled and hot as like as a fruncule lesion. No regional lymph nodes were palpable. The patient was afebrile. The larva infested was pulled out by forceps, but unfortunately, complete larval body was not obtained. The larva was identified with 2nd instar of *D. hominis* by the characters of cephalopharyngeal sclerite and body spines (Figs. 7 and 8).

Discussion

Human bot fly, *Dermatobia hominis*, is one of the common flies which causing myiasis in humans and animals in the tropical lowland forest of Central and South America, and as air travel increases, many imported cases are reported more frequently in the

Correspondence: Satoshi Shinonaga

篠永 哲¹⁾, 川本文彦²⁾, 水野さほこ²⁾, 芥川篤志³⁾,
平岡佳郎⁴⁾ (¹⁾東京医科歯科大学医学部医動物学教室,
²⁾名古屋大学医学部医動物学教室, ³⁾八千代病院・
安城市, ⁴⁾平岡医院・半田市)

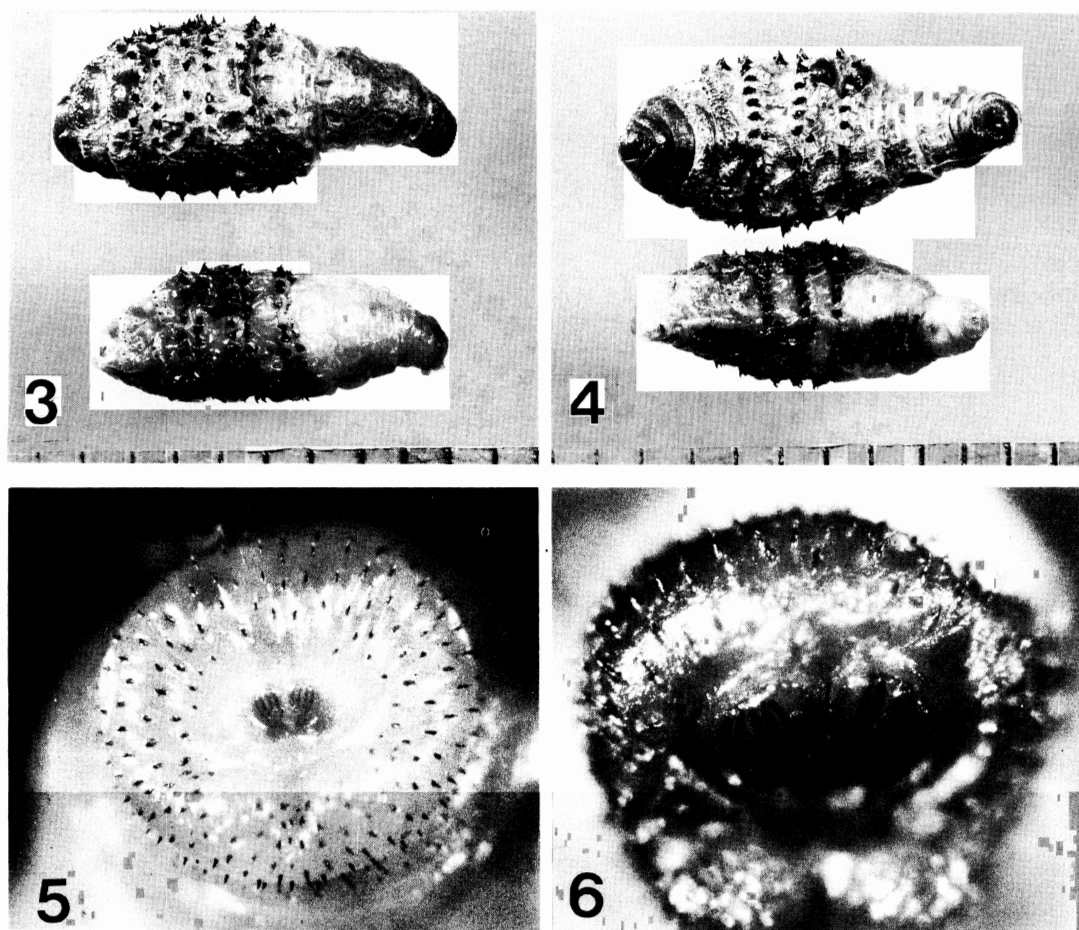


Figs. 1–2 *Dermatobia hominis* Linnaeus, Jr.

1. Lateral view of third instar larva of case 1; 2. Lateral view of third instar larva elapsed about one month infested (scale: 1 mm).

U. S. A. and Europe (Dalmat, 1955; Hubler *et al.*, 1974; Liu and Buck, 1992; Arosemena *et al.*, 1993; Gordon *et al.*, 1995). Up to the present time, thirteen cases have been reported in Japan (Kagei *et al.*, 1974; Fujiwara *et al.*, 1977; Ohtaki *et al.*, 1978; Taki *et al.*, 1989; Yamagami *et al.*, 1990; Maeda *et al.*, 1990; Harada *et al.*, 1991; Arai *et al.*, 1994; Kurose *et al.*, 1994; Matsumura *et al.*, 1995). The larvae are known as parasite of human, livestock and wild animals. Thomas (1988) reported a mean monthly infestation rate in cattle in Yucatan peninsula of Mexico was 23% and increased up to 71% during wet season. As shown in many references (James,

1947 and others), the adult females never directly lay their eggs on the host skin. They capture carrier insects, such as day-flying mosquitoes, muscoid flies or ticks, and attach eggs on their abdomens. The larvae develop in the eggs from 5 to 15 days after deposition, but do not hatch out, remaining inside of egg shells. When carrier insects or ticks close to warm-blooded host for blood sucking or licking tear or body fluid, they rapidly hatch out and penetrate into the host's skin within 5 to 10 minutes. However, Hubler *et al.* (1974) have stated that the larvae that do not immediately penetrate into the host can survive up to 20 days on the exposed skin. The



Figs. 3–6 *Dermatobia hominis* Linnaeus, Jr. (case 1).

3. Dorsal views of second (topside) and 3rd instar larvae (bottom); 4. Ditto, ventral views; 5. Posterior view of last segment (2nd instar larvae); 6. Ditto (3rd instar larva).

duration of the larval development is from 6 to 12 weeks in man. They feed on tissue exudate and mature larvae leave the host and pupate in the soil. Pupal duration is 4 to 11 weeks and adults live for 8 to 9 days.

In the human cases, the larvae grow slowly than in cases of livestock. According to James (1947), fully grown 3rd instar larvae are elongated-oval, with the heavy spines somewhat reduced (Fig. 9); the posterior spiracles are sunken in a cavity and consist of three slits and no button. It was very rare in human cases that fully grown larvae were removed. In Japan, however, Ohtaki et al. (1978)

removed 3rd instar larvae, about 2 cm in body length, from a Japanese traveller who was infested with this fly in Mexico and Yamagami et al. (1990) reported a case of large 3rd instar larvae imported from Brasil. In usually, the infesting larvae have been removed in 2nd or early stage of 3rd instar because of strong pain caused by active larvae. In Japanese cases, infested larvae sometimes grow up to 3rd instar. It is the reason that Japanese physicians have no knowledge on this disease and make a wrong diagnosis with fruncle. The larvae grow up during use of a long course of antibiotic therapy and observing the lesion. In case 1, we obtained 2nd and

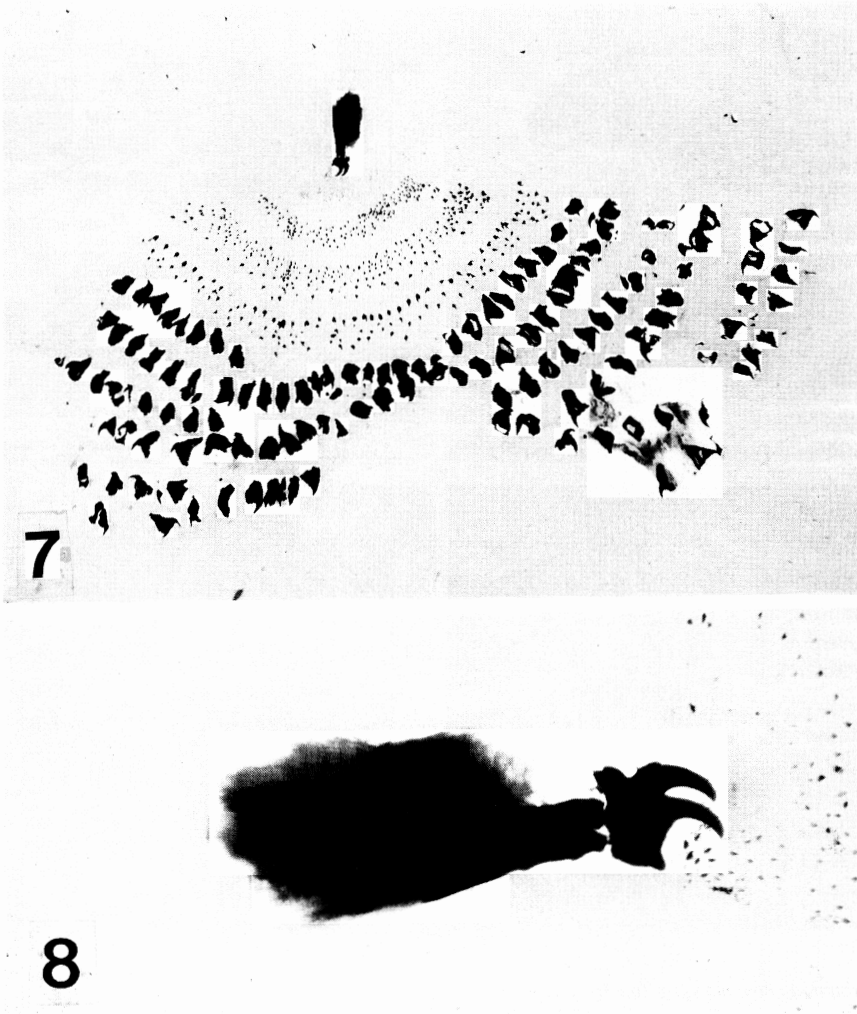


Fig. 7 and 8 *Dermatobia hominis* Linnaeus, Jr. (case 2).
8. Anterior part of the removed larva; 9. Cephalopharyngeal sclerite.

3rd instar larvae, but there are no morphological differences between them except for the number of slits in posterior spiracles (Figs. 5 and 6). As mentioned above, mature 3rd stage larvae are more than 2 cm in length with reduced spines. It is supposed that this larva was just after molting and still have had characters of 2nd instar. Senior author (S.S.) have experienced another case of dermatobiosis (unpublished) which is supposed one month elapsed after infestation (Fig. 2). The body length of the larva is about 13mm with stronger spines than those

of the mature larvae.

References

- 1) Arai, T., Kyoba, S., Furukawa, T., Takesaki, S. and Ito, Y. (1994): A case of cutaneous myiasis due to *Dermatobia hominis*. Jpn. J. Dermatol., 104, 154.
- 2) Arosemena, R., Booth, S. A. and Daniel Su, W. P. (1993): Cutaneous myiasis. J. Am. Acad. Dermatol., 28, 254-256.
- 3) Dalmat, H. T. (1955): Cutaneous myiasis of the scalp due to *Dermatobia hominis* (Linnaeus Jr.) (Diptera; Cuterebridae). Amer. J. Trop. Med. Hyg., 4, 334-335.

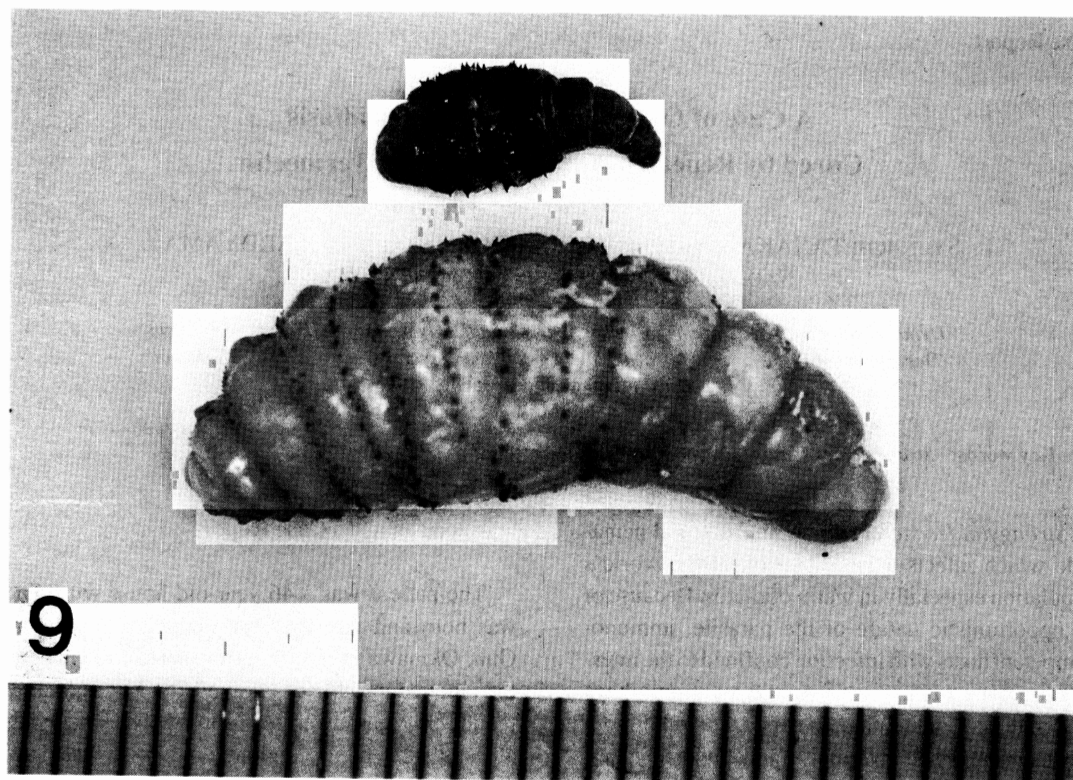


Fig. 9 Mature 3rd instar larva (ex. cattle) and 3rd instar larva of case 1.

- 4) Fujiwara, N. T., Aihara, T., Ito, Y. and Yanagisawa, T. (1977): Cutaneous myiasis due to *Dermatobia hominis*. Jpn. J. Trop. Med. Hyg., 5, 30.
- 5) Gordon, P. M., Hepburn, N. C., Williams, A. E. and Bunney, M. H. (1995): Cutaneous myiasis due to *Dermatobia hominis*: a report of six cases. Brit. J. Dermatol., 132, 811–814.
- 6) Harada, M., Hashimoto, K. and Yano, K. (1991): A case of cutaneous myiasis due to *Dermatobia hominis*. (The eighth case in Japan). Skin Res., 33, 487.
- 7) Hubler, W. R. Jr., Rudolph, A. H. and Dougherty, E. F. (1974): Dermal myiasis. Arch. Dermatol., 110, 109–110.
- 8) James, M. T. (1947): Flies that cause myiasis in man. U. S. Dept. Agr., Misc. Publ. No. 631, pp. 100–104.
- 9) Kagei, N., Hirama, T., Ogawa, Y., Toga, N., Takaoka, M. and Kurahaashi, H. (1974): A cutaneous myiasis due to *Dermatobia hominis*. Rinsho Derma., 25, 291–294 (in Japanese).
- 10) Liu, H. and Buck, H. W. (1992): Cutaneous myiasis: a simple and effective technique for extraction of *Dermatobia hominis* larvae. Int. J. Dermatol., 31, 657–659.
- 11) Maeda, R., Makita, E., Segawa, M., Shibuya, T. and Ogino, M. (1990): A case of myiasis caused by *Dermatobia hominis*. Jpn. J. Trop. Med. Hyg., 18, 197–201.
- 12) Matsumura, T., Nishioka, E., Nagahama, M., Washio, B., Funasaka, Y., Ichihashi, M. and Kato, S. (1995): A case of cutaneous myiasis due to *Dermatobia hominis*. Clinical Parasitology, 6, 80–82.
- 13) Ohtaki, N., Kobayashi, M., Sato, Y., Kano, R. and Terada, Y. (1978): A case of cutaneous myiasis due to *Dermatobia hominis* imported from Mexico. Rinsho Derma., 20, 461–464 (in Japanese).
- 14) Taki, J., Kubo, K. and Oguchi, M. (1989): A case of cutaneous myiasis due to *Dermatobia hominis*. Jpn. J. Clin. Dermatol., 43, 429–432.
- 15) Thomas, P. B. (1988): The pattern of *Dermatobia* (Diptera: Cuterebridae) myiasis in cattle in Tropical Mexico. J. Med. Entomol., 25, 131–135.
- 16) Tsuda, S., Nagaji, J., Kurose, K., Miyasato, M., Sasai, Y. and Yoneda, Y. (1995): Furuncular cutaneous myiasis caused by *Dermatobia hominis* larvae following travel to Brazil. Int. J. Dermatol., 35, 121–123.
- 17) Yamagami, S., Segawa, Y., Saeki, M., Yamada, M., Yoshida, M. and Tezuka, T. (1990): A case of cutaneous myiasis due to *Dermatobia hominis*. Skin Res., 32, 136.