Research Note

Oral myiasis due to *Lucilia sericata* (Diptera: Calliphoridae) on a patient suffering from cerebral contusion in an intensive care unit (ICU) of a general hospital

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Abstract: In July 5, 2004, a 59-year-old man who suffered head contusion in a fall accident was admitted to a general hospital. Computed tomography revealed intracranial left temporal to occipital hemorrhage and bilateral frontal lobe contusion. Then he was admitted to an intensive care unit (ICU) at 9:55 p.m., July 5. In the morning of July 9, the attending surgeon found some 50 maggots with body length of 10 mm from his oral cavity (mainly in his pharynx and larynx). The maggots were identified as the 3rd-instar larvae of *Lucilia sericata*. The duration between admission to ICU and the discovery of 10 mm long *L. sericata* larvae was three and a half days. Therefore, there was room for discussion whether deposition of eggs by this causative fly was inside or outside ICU.

Key words: *Lucilia sericata*, oral myiasis, cerebral contusion, ICU, Tochigi

INTRODUCTION

We have reported myiases caused by various species of flies; *Lucilia sericata* (Chigusa and Sugiyama, 1987; Chigusa et al., 1996, 1998a, 1999, 2002, 2005), *L. illustris* (Chigusa et al., 1996), *Sarcophaga peregrina* (Chigusa et al., 1994), *S. similis* (Chigusa et al., 1994), *S. melanura* (Chigusa et al., 1997), *S. ruficornis* (Chigusa et al., 1998b) and *Dryomyza formosa* (Chigusa et al., 2000). The affected organs of these cases were skin, auditory meatus and alimentary tract.

A summary of myiasis due to *L. sericata* already reported by the authors (Chigusa and Sugiyama, 1987; Chigusa et al., 1996, 1998a, 1999, 2002, 2005) is as follows; a 79-year-old male with neck cancer metastasis, an 87-year-old woman with angiosarcoma of the scalp, a 60-year-old woman with alcoholic and head injury, an 81-year-old woman with diabetes, hypocholesteremia and depression who had auditory meatus infestation, a 90-year-old woman with skin cancer and an early thirties woman without any psychological and physical problem. *Lucilia sericata* is very common throughout Japan and adults are found from early spring to fall in the central part of Honshu. This is a typical domestic species and is found near human dwellings (Kano and Shinonaga, 1968). For these reasons, we think it is important to accumulate data regarding *L. sericata* myiasis for the prevention and control of myiasis.

We present here a case of oral myiasis due to *L. sericata* (Meigen, 1826), which
occurred in an intensive care unit (ICU) of a general hospital. While this case was discovered in the ICU, there was room for discussion regarding the time of the mother fly's deposition of eggs in the patient's mouth from the entomological point of view.

**Case Presentation**

A 59-year-old-man was transported to an emergency outpatient division of a general hospital located in Tochigi Prefecture, Japan, on July 5, 2004. He had accidentally fallen from a height of 3.5 meters when he was repairing a fence near human dwellings. At the emergency division, he was found to suffer left occipital to temporal hemorrhage and bilateral frontal lobe contusion by means of brain-computed tomography. He was in a stupor to comatose status. After tracheal intubation for respiratory management, he was transferred to ICU for further intensive treatment at 9:55 p.m., on July 5. There were more than two entrance barriers to the ICU, which were ordinarily closed, but the possibility of invasion of dipterous flies which gathered on a white overall of staff inside the ICU was undeniable. At this time, the attending surgeon did not find any small creatures in the patient's mouth during tracheal intubation procedure. After admission to the ICU, convulsive seizure and intracranial hemorrhage of the patient were aggravat-ed. Therefore, he received anesthetic and hypothermia therapy (at 36°C) for prevention and management of brain edema. In the morning of July 9, the attending surgeon found around 50 maggots with body length of 10 mm in the patient's pharynx and larynx. This patient did not have oral feeding and there were no obvious lesions where maggots infested.

Some of the maggots found were reared with pork in an insectarium under the air temperature of 25°C and 60% RH. The morphologic characteristics of the larvae are shown below. Anterior spiracles each with 7 to 8 branches in a single row; Posterior spiracles medium sized, fine peritreme with inner projection between slits, button present; spiracular slits slender and long; distance between both posterior spiracles subequal to the diameter of a spiracle; Cephalopharyngeal sclerite medium sized, basal piece of mouth hook stout, hook part stout, long and bent downwards and pointed, ventral cornua truncated posteriorly, and without pigmented area below the end of lower margin, upper part of dorsal cornua poorly pigmented, accessory sclerite absent, hypostomal sclerite short and slender, anterodorsal process developed (Ishijima, 1967). With these morphological characteristics, the maggots found were identified as the 3rd-instar larvae of *L. sericata*. These larvae could not pupariate.

**Discussion**

Concerning nosocomial myiasis, Ng et al. (2003) (*Chrysomya bezziana* on 89-year-old woman), Yoshitomi et al. (1997) (*L. sericata* on 86-year-old woman), Minar et al. (1995) (*L. sericata* on a patient of unknown gender and age) and Daniel et al. (1994) (*L. sericata* on a patient of unknown gender and age) reported oral myiasis occurring inside a hospital. On the other hand, myiasis has occurred in ICU worldwide, and the following cases have been reported. Those were *L. sericata* and *Megasseelia scalaris* in Kuwait (Hira et al., 2004), *L. sericata* in the U.S. (Beckendorf et al., 2002), *S. peregrina* in Japan (Yoneda et al., 1998), *Wohlfahrtia magnifica* in Turkey (Çiftcioglu et al., 1997), larvae of genus *Lucilia* in Korea (Chung et al., 1996) *S. peregrina* in Japan (Matsuzaki and Yaman-zaki, 1987) and *Cochliomyia macellaria* in the U.S. (Smith and Clevenger, 1986).

The main purpose of guidelines for ICU is to prevent patients from infections of microbial pathogenes (Garner, 1996) but not from infestation of arthropods especially dipterous flies. Therefore, we would like to call attention to the problem of
myiasis in ICU through this case.

The present patient was in a comatose status because of his left occipital to temporal hemorrhage and bilateral frontal lobe contusion. We have indicated that disturbances of consciousness due to cancer (Chigusa and Sugiyama, 1987, Chigusa et al., 2002), pontine infarction (Chigusa et al., 1997) and mental deterioration (Chigusa et al., 1998a) and newborn babies (Chigusa et al., 1994) were among the most important predisposing factors for myiasis. Alcoholism (alcohol addiction), which tends to make him or her indifferent to personal appearance and often results in living under filthy conditions, was also a predisposing factor for myiasis (Chigusa et al., 1998a). Fotedar and Banerjee (1991) furthermore reported human cutaneous myiasis in a heroin addict with mixed infestation of C. bezziana and Sarcoptophaga sp. in India. In an overview of these cases, it was found that patients with comatose or stupor mental status had a predisposing factor for myiasis since they could not perceive flies swarming around them or gathering to orifices or wounds and drive them away.

The predisposing and dipterous fly attractant factors for myiasis other than patients’ unconsciousness outlined by Yoneda et al. (1998) are as follows: 1) Newborn infant otomyiasis; due to an amniotic fluid, milk, vomitus and tear in the external auditory meatus, and their immature movement activity. 2) Alimentary tract myiasis; lack of hygiene by parents in the cases of patients less than 10 years old, chronic digestive organ diseases in cases of patients over 40 years old. 3) Urogenital myiasis; stool or urine especially from diabetic patients are attractants for the mother fly. 4) Malignant neoplasm; tumor and necrotic tissues and nasty smell attract flies. 5) Psychosis; automutilation behavior of the patients.

The question concerning the time of egg deposition of flies was raised. Nishida (1984) and Nishida et al. (1986) demonstrated the average body length of genus Phaenicia (=Lucilia) reared at the air temperature between 30 and 35°C. According to their data, larval body length became 13 mm (the 3rd instar) in two days (day 2) after their egg deposition. But the body length more than 10 mm continued up to day 6 to 7, just soon before their pupariation. The maggots found from the patient’s oral cavity were the 3rd instar larvae with body length of 10 mm long and the duration between admission to ICU and the discovery of larva was three and a half days. There were two possibilities; egg deposition of the mother fly happened before or after admission to ICU, i.e. when he fell in an accident near human dwellings or after the admission. It was unfortunate that we failed to make larvae to pupariate; therefore, the estimated maggots’ age was from 2-day-old to 6-day-old larvae. The attending surgeon witnessed a dipterous fly in this ICU before; therefore, we think most probably that this myiasis happened in the ICU.

Finally, we would like to emphasize that the physicians and/or nurses should take great care of the oral cavity of the patients admitted in ICU, since most of them have several predisposing factors for myiasis.

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References


