Research Note

Orbital myiasis in a severely mentally retarded woman who apparently enucleated her own eye

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Abstract: In July 2002, family members discovered that the left orbital socket of a 66-year-old severely mentally retarded woman was empty and therefore took her to the emergency outpatient division of a general hospital in Tochigi Prefecture, Japan. The patient had erosion and inflammation of the left eyelid since March 2002. She had not received doctor's consultation until this episode happened. The eyelid lesion was diagnosed histopathologically as sebaceous gland carcinoma. Physical examination revealed that 3rd instar larvae of the Family Calliphoridae were present in the orbital socket. The attending physician (K.S.) confirmed that the left orbit was absent. The maggots were reared to adults and identified as Lucilia sericata.

Key words: myiasis, mental retardation, sebaceous gland carcinoma, enucleation of eye, Lucilia sericata

INTRODUCTION

Myiasis is the infestation of living vertebrates with dipterous larvae that feed on the host tissue or ingested food (Zumpt, 1965). Patton (1922) classified myiasis according to the type of host-parasite relationship: obligatory parasites must develop on live hosts, and facultative parasites occasionally deposit their eggs and/or larvae on live hosts but usually develop on decaying organic matter (Hall and Smith, 1993). In clinical terms, the type of myiasis depends on the part of the host's body that is infested. White (1996) recognized three parasite categories: (1) cutaneous tissue parasites, including maggots that cause furuncles (subcutaneous myiasis), invade sores and wounds (wound myiasis), burrow under the skin (dermal myiasis), or suck blood (i.e., Auchtheromyia senegalensis) (Noireau, 1992); (2) body cavity parasites, including those that invade the nasal passages (nasal myiasis), mouth, ears, and accessory passages, enter the orbit of the eye (ocular myiasis), or penetrate the anus or vagina; and (3) gut lumen parasites, due to eggs and/or larvae of many fly species which may be deposited on foodstuffs and then ingested (intestinal myiasis). Gut lumen parasites may survive passage through the intestinal tract.

To the best of our knowledge, this is the first report of artificial, self-induced orbital myiasis due to Lucilia sericata (Meigen, 1826) (Diptera: Calliphoridae) in a patient who may have enucleated her eye. This case highlights a curious, unusual form of
orbital myiasis that resulted from the patient’s severe mental retardation.

**Case Presentation**

The patient was a severely mentally retarded 66-year-old Japanese woman living in Tochigi Prefecture, approximately 100 km northeast of metropolitan Tokyo, Japan, with sebaceous gland carcinoma (SGC) of the left eyelid. She had an erosion and an inflammatory lesion around the eyelid, but when family members recommended that she consult a physician, she refused. Her family had noticed that the patient continually fingered her eyelid, but she resisted anyone examining her closely, and when family members attempted to do so, she covered the eye region with her hands. Finally, on 26 July 2002, her family discovered that her left eyeball was absent.

The patient was forced to consult the emergency department of a hospital, when 15 or 16 maggots were found alive in the left orbital socket. The socket was filled with oozing blood but the eyeball was absent (Fig. 1). The patient could not speak because of her severe mental retardation; therefore, we could not determine how the left eye was removed from the orbital socket by the patient.

The maggots found were in the 3rd instar larvae and were later identified as *Lucilia sericata* after their emergence as adult flies (Fig. 2).

**Discussion**

The authors have encountered myiasis of various types (Chigusa and Sugiyama, 1987; Chigusa et al., 1994, 1996, 1997, 1998a, 1998b, 1999, 2000, 2002, 2005a, 2005b), among which the predominant causative species has been *L. sericata*, the maggots found in this case. However, they had never seen a case of orbital myiasis, or a patient who had apparently enucleated her own eye. While numerous types of myiasis have been reported worldwide, our literature review found that orbital myiasis was reported by Devoto and Zaffaroni (2004), Caca et al. (2003), Rocha et al. (1999), Agarwal and Singh (1990), Kersten et al. (1986), Wood and Slight (1970), Gupta and Nema (1970), and Mathur and Makhija (1967). The patients were a 10-year-old boy (*Cochliomyia hominivorax* on a hydroxyapatite implant), a 85-year-old woman (*Hypoderma bovis* on a wound), a 54-year-old man (*C. hominivorax* on a basal cell carcinoma), a patient of unknown gender and age (unidentified maggots on a basal cell carcinoma), a 65-year-old man (*Chrysomyia bezziana* on a wound), a 49-year-old woman (*Calliphora vomitoria* on a comatose patient), a 60-year-old woman (unidentified maggots on

![Fig. 1. Photo of the left orbital socket without the eyeball. The 3rd instar larvae of *Lucilia sericata* are seen in the orbital socket.](image1)

![Fig. 2. Adult fly of *Lucilia sericata*, which emerged from larvae collected from the patient's orbital socket.](image2)
generalized swelling of the face, with puffiness of the eyelids and lips), and a 65-year-old man (H. bovis on the eye), respectively.

The sebaceous gland carcinoma is a highly malignant neoplasm that arises from the meibomian glands, the gland of Zeis, and the sebaceous glands of the lacrimal caruncle and eyebrow (Vaughn et al., 2004). It is an aggressive tumor with a high recurrence rate, significant metastatic potential, and high mortality rate. It affects all races, occurs in women more often than men, and usually in the sixth to seventh decades of life (Vaughn et al., 2004). Our patient was a female in her 60s and therefore in the group most predisposed to develop SGC.

The present case appeared to be a very unlikely occurrence, since it is necessary to cut through and/or tear and pull out six muscles and one nerve to remove the eyeball from its socket: the superior rectus muscle (M. rectus superior), lateral rectus muscle (M. rectus lateralis), inferior rectus muscle (M. rectus inferior), medial rectus muscle (M. rectus medialis), superior oblique muscle (M. obliquus superior), inferior oblique muscle (M. obliquus inferior), and optic nerve (N. opticus). According to the consulting ophthalmologist, if those muscles and nerve had been intact, it would have been nearly impossible for the patient to enucleate her eye manually. As Vaughn et al. (2004) reported, SGC has a significant metastatic potential, and thus metastasis to the muscles and nerve(s) around the eye may have occurred in our patient. Metastasis of SGC to the muscles and nerve(s), if present, may have weakened them, allowing the patient to remove the eyeball with her fingers. Because the orbital region is supplied by the trigeminal nerve (N. trigeminus), which may have undergone necrosis due to the carcinoma, the patient may have felt little pain while tearing the muscles and nerve(s) and removing her eye.

This case represents an unusual type of artificial, self-induced orbital myiasis due to L. sericata in a severely mentally retarded patient who may have apparently enucleated her own eye.

We (1996) previously recommended that not only the elderly or debilitated, but also those with psychiatric disorders such as schizophrenia, should be protected from flies, because autism and/or diminished sensitivity may make it easy for flies to deposit eggs or larvae on their skin or in body orifices. We (1998a) also reported on a myiasis patient with alcoholism, which made her indifferent to personal appearance and resulted in her living under filthy conditions; that patient was also intellectually impaired. Fotedar and Banerjee (1991) reported a case of human cutaneous myiasis in a heroin addict with mixed infestation of C. bezziana and Sarcophaga sp. in India. Those cases illustrate that psychosis, alcoholism, drug addiction, and mental impairment are also predisposing factors for myiasis. Among predisposing psychiatric disorders, the authors (1999) reported a case of aural myiasis in which the patient suffered from hypochondria and depression.

We would like to emphasize again that severe mental retardation is a predisposing factor for myiasis in addition to the conditions mentioned above.

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