**Gastrophilus spp. myiasis in Iranian equine**

Mosa Tavassoli, Mehdi Bakht

*Urmia University, Faculty of Veterinary Medicine, Department of Pathobiology, Urmia, Iran.*

Correspondence: Tel. +984412972616, Fax +984412971926, E-mail mtavassoli2000@yahoo.com

**Abstract.** Fifty six equines from Iran were examined post-killed for the presence of *Gasterophilus* larvae during the years 2010-2011. Stomachs were removed according to the suitable necropsy techniques and checked for *Gasterophilus* species. Nine equines were infected by larvae of *Gasterophilus* spp. 26 second stage larvae (L2) and 192 third stage larvae (L3) were collected from infested equines. Three species of *Gasterophilus* were identified with the following total larvae number and rate: *Gasterophilus nasalis* 7.14% (152/69.72%), *G. intestinalis* 5.35% (34/15.59%), *G. inermis* 5.35% (32/14.67%) respectively.

**Keywords:** *Gasterophilus; Myiasis; Stomach; Equines; Iran.*

Received 26/04/2011. Accepted 10/10/2011.

**Introduction**

Nine species of *Gasterophilus* (Diptera, Oestridae) flies have been described causing gastrointestinal myiasis in equids. While *Gasterophilus intestinalis* (De Geer, 1776) and *G. nasalis* (Linnaeus, 1758) are distributed worldwide and are often the only species reported in many parts of the New World, the remaining species are only reported in very limited areas of Europe, Eastern Countries (Zumpt, 1965) and Africa (Horak et al., 1984). Adult botflies deposit their eggs on the hosts' hair at different locations depending on the species of *Gasterophilus. G. pecorum* is an exception as females lay their eggs on grass, leaves and stems of plants (Zumpt, 1965). Infection occurs when eggs are introduced into horse's mouth by licking and grooming. The first larval stage (L1) hatches, starts migrating and moulting into the second larval stage (L2) in the oral cavity (Cogley and Cogley, 1999). Larvae of different species of *Gasterophilus* are specifically present in one or more regions of the gastrointestinal tract (Otranto et al., 2005). The clinical signs associated with the migration and maturation stages of the larvae are difficult to diagnose, but it has been shown that different species of *Gasterophilus* can cause severe damages during their life cycle (Shefstad, 1978; Cogley, 1989).

To date, the importance of infestation with *Gasterophilus* spp myiasis in equine in Iran has not been investigated in detail. The aim of the current study was to assess the status of *Gasterophilus* spp in indigenous equine reared under traditional farming system in terms of different sex and age groups.

**Methods**

**Larval collection**

We collection 56 necropsied equine (containing 49 donkey, 4 horse and 3 Mule) from different...
regions of Iran during 2010 and 2011. The animals were of both sexes. *Gasterophilus* spp. larvae were collected from different portion of the stomach. After removal of the gastrointestinal tract at autopsy, the stomach was examined in detail to determine the presence of *Gasterophilus* larvae. The stomach was opened along the greater curvature from the cardiac orifice to the pylorus. All the larvae were collected and counted by their stages. An attempt was made to locate. Differential diagnosis was performed on the basis of larvae morphology.

**Experimental laboratory design**

All the collected larvae were washed in a sterile phosphate saline buffer (PBS 0.1 M, pH 7.2), counted and identified under a stereomicroscope using the identification keys (Zumpt, 1965). Larvae were measured, identified and classified in different larval stages and different species (Zumpt, 1965). Existence spines in one row or tow rows on ventral body surface, shape of mouth-hooks, and length of body were the diagnostic characters for identification of different species. In *G. nasalis* spines on the ventral surface of segments are arranged in one row and the first three body-segments more or less conical, without sharp step-like constrictions at the hind margins. Third segment dorsally always has a row of spines; ventrally it may be present or more or less reduced. In *G. intestinalis* spines on the ventral surface of segments are arranged in tow rows, mouth-hooks with a saddle-like excision before the geniculate bent, tips of body spines are blunt, and the mature larvae are up to 20 mm long. In *G. inermis* spines on the ventral surface of segments are arranged in tow rows, mouth-hooks without a saddle-like excision and strongly bent their tips are directed backwards and approach the base. Ventral side of body-segment with tow complete rows of spines, that of segment XI has one row. The mature larva is not longer than 16 mm (Zumpt, 1965).

**Result**

The larvae of *Gasterophilus* spp. were found in nine (16/07%) of the 56 equines autopsied. Three species of *Gasterophilus* were identified: *G. intestinalis*, *G. nasalis* and *G. inermis*. When taking into account total larve number collected infested animals, *G. nasalis* was the most common species (152/69.72%) followed by *G. intestinalis* (34/15.59%) and *G. inermis* (32/14.67%) (table 1). The post-mortem examination of the equines revealed the occurrence of 3rd instars of *Gasterophilus* spp larvae dominated. The 2nd instars larvae were found in 4 infected equines that was *G. inermis* and *G. nasalis*. A total of 192 third stage larvae (L3) were collected from infested equines (table 1). *Gasterophilus* species and larval number for each infested equines are shown in table 1.

**Table 1.** *Gasterophilus* species and larval number for each infested horses

<table>
<thead>
<tr>
<th>Infested equines</th>
<th><em>G. nasalis</em></th>
<th><em>G. intestinalis</em></th>
<th><em>G. inermis</em></th>
<th>Sex</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>L2</td>
<td>L3</td>
<td>L2</td>
<td>L3</td>
</tr>
<tr>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>26</td>
</tr>
<tr>
<td>3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>5</td>
<td>12</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>6</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>7</td>
<td>-</td>
<td>75</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>8</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>9</td>
<td>-</td>
<td>65</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Total** 12 140 34 14 18

**Discussion**

The prevalence of botfly larvae in animals poses a serious epizootic and economic problem in several world areas. The prevalence of *Gasterophilus* spp has been investigated in different countries. They are currently worldwide distributed in horses (Drudge et al., 1975; Pandey et al., 1980; Edwards, 1982; Sharir, 1987; Sweeney, 1990; Bernard et al., 1994; Hoglund et al., 1997; Agneessens et al., 1998). Iran is a suitable country in terms of climatic and ecological factors for spread of *Gasterophilus* spp. Studies on the presence and prevalence of species in different regions of Iran are limited. In studies done in various regions of the world, prevalence of infestation ranged from 11% to 100% including 11.1% in Israel (Sharir et al., 1987), 12.3% in Sweden (Hoglund et al., 1997), 43% in Ireland...
Our earlier examinations despite a few reports on infestation to *Gasterophilus* spp. in Iran there were not any reports on literature on *Gasterophilus* species and its importance.

References


