Presence of *Gasterophilus* Species in Arabian Horses in Sanliurfa Region

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**SUMMARY:** In this study, ivermectin was administered orally to 112 Arabian horses for detection of *Gasterophilus* species in the Sanliurfa region between June-July 2006. Eleven (9.82%) Arabian horses were found to be infected by larvae of *Gasterophilus* spp. A total of 409 third stage larvae (L3) were collected from fecal samples. In the Sanliurfa region, the prevalence of three species of *Gasterophilus* was identified as follows: *Gasterophilus intestinalis* (6.25%), *G. nasalis* (2.67%) and *G. pecorum* (0.89%).

**Key Words:** Gasterophilus, Arabian horse, Sanliurfa

**INTRODUCTION**

The genus *Gasterophilus* (Diptera, Oestridae) includes nine species. Larvae of the flies cause gastrointestinal myiasis in equids. They are present for about 10 months in different regions of the equid gastrointestinal tract (7, 11, 12, 23).

The larval stages of *Gasterophilus* are obligatory parasites in the gastrointestinal tract of horses. They are currently worldwide distribution and originally from Palaearctic and Afrotropical regions (19, 22).

Gasterophilosis is characterized by difficulties in swallowing, gastrointestinal ulcerations, gut obstructions or volvulus, rectal prolapses, anemia, diarrhea and digestive disorders (12, 14, 17, 19). In addition to their significance as parasites of horses, there are reports of human myiasis associated with *Gasterophilus* spp. larvae. Subcutaneous-creeping or opthalmo-myiasis by *Gasterophilus* spp. first and second stage larvae (L1, L2) have been reported by James, (6) and Royce et al (16).

The presence of *Gasterophilus* species has been investigated in different countries such as Belgium (1), Ireland (21), France (3) and Germany (15) between the rates of 43 and 69%, respectively.

Only six *Gasterophilus* species were detected in Turkey, namely *Gasterophilus intestinalis*, *G. nasalis*, *G. hemorrhoidalis*, *G. inermis*, *G. nigricornis* and *G. pecorum*. Data on the presence and prevalence of *Gasterophilus* species in Turkey are limited. Although Gasterophilosis has been studied in Turkey, no information is available for Arabian horses (10, 18).

Arabian horse breeding is very important in Sanliurfa region and the total horse population is approximately 2500 according to 2006 data. Of this number about 2000 were Arabian horses and remaining were 500 crossbred (2).

The aim of the present study was to determine the presence of *Gasterophilus* species in Arabian horses from Sanliurfa district, Southeastern Anatolian region of Turkey.

**MATERIALS AND METHODS**

This study was conducted in Sanliurfa district (37.1°N, 38.8°E). The area has a continental climate and the average altitude is approximately 600 m above the sea level.

The slaughter study for the diagnosis of *Gasterophilus* spp. larvae is difficult and expensive because the horse meat has not been consumed in Turkey. Thus, current research has been based on application of antiparasitic drug (ivermectin).

All the horses were varying ages (1-21 years), both sex (28 male and 84 female) and breeding types (72 Stallion and 40 non-stallions). Age, localization, breeding system and sex of each horse were recorded. Between June-July 2006, oral ivermectin (Equimax® paste, Virbac corp.) at dose rate of 0.2
mg/kg was administered to 112 Arabian horses. Any anti-parasitic medication and copro-parasitological examination were not administered to all horses during one year.

_Gasterophilus_ larvae were collected and counted from two days the all fecal samples of each horse after from ivermectin administration. All larvae collected were washed in saline solution (NaCl 0.9%) and identified using a stereo-microscope (Olympus-SZ405STR) with magnification capacity from 6.7X to 40X. Larvae were identified on the basis of peritreme structures and arrangement of the spines on the surface of the segments. After identification the larvae were stored in 70% ethanol.

Arabian horse naturally infested with Gasterophilus spp. for slaughter studies is often difficult and expensive since horse meat has not been consumed in Turkey. Thus, current research has been based on application of antiparasitic drug (ivermectin).

Differences among prevalence in relation to sex, age and breeding types classes were tested by Chi square test and the differences were considered to be significant when P < 0.05.

RESULTS

_Gasterophilus_ spp. larvae were found in 11 of 112 Arabian horses (9.82%). The number and percentage of positive and negative Arabian horses, grouped according to age, sex and breeding types are shown in Table 1.

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Positive</th>
<th>Negative</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No (%)</td>
<td>No (%)</td>
<td>No (%)</td>
</tr>
<tr>
<td>Horses</td>
<td>11 9.82%</td>
<td>101 90.18</td>
<td>112 100</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-3 yrs</td>
<td>2 15.38%</td>
<td>11 84.62</td>
<td>13 11.60</td>
</tr>
<tr>
<td>&gt;3 yrs</td>
<td>9 9.09%</td>
<td>90 90.91</td>
<td>99 88.40</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>1 3.57%</td>
<td>27 96.43</td>
<td>28 25.00</td>
</tr>
<tr>
<td>Female</td>
<td>10 11.90%</td>
<td>74 88.10</td>
<td>84 75.00</td>
</tr>
<tr>
<td>Breeding type</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stallion</td>
<td>4 5.55%</td>
<td>68 94.55</td>
<td>72 64.28</td>
</tr>
<tr>
<td>Non-stallion</td>
<td>7 17.5%</td>
<td>33 82.5%</td>
<td>40 35.72</td>
</tr>
</tbody>
</table>

Table 2. Number and percentage of _Gasterophilus_ species in Arabian horses and number of larvae for each species

<table>
<thead>
<tr>
<th>Species</th>
<th>Horse infested</th>
<th>Larval number</th>
</tr>
</thead>
</table>
|               | No (%)         | No (%)        |%
| _G. intestinalis_ | 7 63.63%  | 372 90.95    |
| _G. nasalis_   | 3 27.27%  | 34 8.31      |
| _G. pecorum_   | 1 9.10%   | 3 0.74       |
| Total          | 11 100.00%  | 409 100.00%  |

Three _Gasterophilus_ species were determined in infested horses. _Gasterophilus intestinalis_ was the most common species (63.63%) followed _G. nasalis_ (27.27%) and _G. pecorum_ (9.10%). A total of 409 third stage bot fly larvae (L3) were determined from fecal samples (n=112) (Table 2).

In each infested animal, only a species of _Gasterophilus_ was found. The minimum and maximum numbers of larvae in a single horse varied from 3 to 83. In the majority of the horses (63.63%), it was harvested less than 50 larvae.

There was no significant difference in larval prevalence or abundance between male and female Arabian horses for gasterophilosis. Similarly, there was no evidence of any association between age of the host and the numbers of _Gasterophilus_ larvae. But, there was significant difference in breeding type between stallion and non-stallion (P< 0.05).

DISCUSSION

The prevalence of _Gasterophilus_ spp. has been investigated in different countries. Infestation with larvae of _Gasterophilus_ spp. is widespread in horses in the world (1, 3-5, 7-9, 13, 20, 21).

The prevalence of gasterophilosis in Sanliurfa (9.82%) is lower than reported in Belgium (58%) England and Wales (52.7%), France (34%) but is similar to those of Germany (8.7%), Sweden (12.3%) and Israel (11.1%) respectively (1, 3-5, 15, 20). This low prevalence may be explained to the current extensive use of antiparasitic drugs with larvicidal activity. Similarly, decline in bot populations has been reported in many parts of the world for the past 25 years due to the use of organophosphates in early years, and more recently, extensive treatment of equids with ivermectin and moxidectin (9). Prevalence and larval burdens of _Gasterophilus_ in different countries are probably due to climatic differences or to different animal husbandry methods.

In Sanliurfa, the summer temperatures reach above 35 °C from May to September, while winter temperatures average 10-15 °C in January. This suggests that fly activity continues throughout all seasons. It is well known that prevalence of _Gasterophilus_ species is influenced by seasonal factors and geographical location. Furthermore, this prevalence may be strongly influenced by the use of antiparasitic drugs of broad spectrum against other parasitic infections (19). Our results were at lower than other studies (1, 3-5, 20). This can be originated from different examination methods (fecal & necropsy).

There was significant difference in breeding type between stallion horses and non-stallions (P< 0.05) for gasterophilosis. The differences may be explained by management factors. Non-stallion horses have been grazed outside all day. However, stallions are mostly kept in shelters.

In conclusion; it was not found a large number of _Gasterophilus_ larvae (9.82%) at fecal examination in Arabian horses from Sanliurfa. In conclusion, _Gasterophilus_ spp. is widespread in Arabi}

REFERENCES


