Prevalence of *Dicrocoelium dendriticum* Infection in Cattle, Sheep and Goat in Gilan Province, Northern Iran

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**Abstract:** *Dicrocoelium dendriticum* is common parasites of herbivores in many parts of Iran. In chronic infections, this parasite causes biliary cirrhosis in liver of cattle, sheep or goat and lead to economic losses. The main aim of this study was to determine the prevalence of *Dicrocoelium dendriticum* in cattle, sheep and goat in Northern Areas of Iran, Gilan Province. This cross-sectional survey was carried out in the slaughterhouses of different localities in eastern and western areas of Gilan province. About 200 cattle, sheep and goat livers were examined. The prevalence of liver infection was 85, 66 and 23.25% in sheep, cattle and goats, respectively. There was significant difference between animals liver infection (p<0.001). Western Gilan showed more prevalence of Dicrocoelium infection as compared with eastern Gilan (p<0.01).

**Key words:** *Dicrocoelium dendriticum*, prevalence, cattle, sheep, goat, chronic infections

**INTRODUCTION**

*Dicrocoelium dendriticum* is a common parasite of herbivores in many parts of the world (Soulsby, 1982) particularly in most countries of the Middle East (Daryani et al., 2006; Gargil et al., 1999). In chronic infections, this parasite causes biliary cirrhosis in liver of cattle, sheep or goats and lead to economic losses (Dumba, 1978). *D. dendriticum* spends its adult life inside the liver of its host. After mating, the eggs are excreted in the feces. The first intermediate host is terrestrial snail and the second is an ant. In ruminants the liver is damaged and the subclinical and chronic disease usually results in decreased production of meat, milk and wool. There are also secondary bacterial infections, fertility problems and great expenses with anthelmintics (Eslami, 1979). Because of insufficient data on Dicrocoelium infection particularly seasonal fluctuation of infection in livestock in northern Iran, this study was exerted to investigate the prevalence of Dicrocoelium infection in slaughtered cattle, sheep and goats in Gilan Province, Northern Iran.

**MATERIALS AND METHODS**

This cross-sectional survey was carried out in the slaughter houses of different localities in eastern and western areas of Gilan Province. Slaughter houses were paid weekly visits between 22.06.2000 and 22.12.2006 and the livers of slaughtered cattle, sheep and goats were examined. Age of animals was recorded as. About 200 livers of each cattle, sheep and goats group were examined. Livers were examined according to the method described by Ogambo-Ongoma (1972) and the parasites were identified by the morphological characteristics (Soulsby, 1982). The total infection rate in different animals was calculated. To determine the difference between distribution of infection rate in animals and season or locality, statistical analysis was performed using chi-square test and SPSS 11 software to show the effects of seasons and locality on liver infection in animals.

**RESULTS AND DISCUSSION**

Among 200 livers of sheep, cattle and goats, 85, 66 and 23.25% were found positive for Dicrocoelium, respectively. There was highly significant difference in Dicrocoelium infection between cattle, sheep and goats. Infection of goats was considerably lower than sheep or cattle (p<0.001). Cattle infection was more in summer compared with autumn (p<0.01) but there was not significant seasonal fluctuation in sheep or goats infection in eastern or western Gilan (Table 1 and 2). Western Gilan showed 4-5% more prevalence of Dicrocoelium infection than eastern Gilan (p<0.01). As we have shown there was a high prevalence of sheep, cattle and goats liver Dicrocoelium infection in northern of Iran. This finding is in accordance with the other findings which have shown that Dicrocoelium infection is
Table 1: Prevalence of *D. dendriticum* infection in animals slaughtered in eastern Gilan, Northern Iran

<table>
<thead>
<tr>
<th>Animals</th>
<th>No. of examined animals (per season)</th>
<th>Animals infected with <em>Dicrocoelium</em> (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Summer</td>
</tr>
<tr>
<td>Cattle</td>
<td>100</td>
<td>61</td>
</tr>
<tr>
<td>Sheep</td>
<td>100</td>
<td>82</td>
</tr>
<tr>
<td>Goat</td>
<td>100</td>
<td>29</td>
</tr>
</tbody>
</table>

Table 2: Prevalence of *D. dendriticum* infection in animals slaughtered in western Gilan, Northern Iran

<table>
<thead>
<tr>
<th>Animals</th>
<th>No. of examined animals (per season)</th>
<th>Animals infected with <em>Dicrocoelium</em> (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Summer</td>
</tr>
<tr>
<td>Cattle</td>
<td>100</td>
<td>65</td>
</tr>
<tr>
<td>Sheep</td>
<td>100</td>
<td>87</td>
</tr>
<tr>
<td>Goat</td>
<td>100</td>
<td>25</td>
</tr>
</tbody>
</table>

common in many areas of Iran (Daryani et al., 2006; Ansari-Lari and Moazzeni, 2006; Eslami et al., 1981) and other countries (Gargil et al., 1999; Dhar et al., 1982; Guenter and Colwell, 2007; Torina et al., 2004; Yadev and Tandon, 1989). In contrast to studies in northwestern Iran, that have shown the existence of highest rate of Dicrocoelium infection in cattle or goats (Daryani et al., 2006); the findings indicate that the highest rate of Dicrocoelium infection occurs in sheep in northern Iran.

It may come from differences in animals food habits, environment or innate immunity. Based on the findings, there was a seasonal fluctuation of Dicrocoelium infection for cattle (and not for sheep or goats). Existing of seasonal pattern of Dicrocoelium infection has also been indicated in many areas of the world (Sissay et al., 2007). On the other hand, there is not simple justification for consistent prevalence of Dicrocoelium infection in summer and autumn in sheep or goats however, it may arise from different pattern of infection among cattle and sheep or goats. Prevalence of Dicrocoelium infection rate was also higher in western than eastern areas of northern Iran. This may come from natural and environmental differences between these two parts of country.

**CONCLUSION**

High prevalence of sheep, cattle and goats liver Dicrocoelium infection in northern of Iran can result in decreased production of meat, milk and wool, secondary bacterial infections and fertility problems; therefore it is necessary to carry out further etiologic and epidemiologic studies to find the ways to battle against Dicrocoelium infection in northern of Iran.

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**REFERENCES**


