DIAGNOSIS OF SARCOCYSTIS SPECIES IN CATTLE IN KONYA REGION

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Summary: In this study, the trypsin trypsin technique was used to investigate the presence and prevalence of Sarcozystis spp. in the cattle in Konya province. Trypsin technique was able to detect Sarcozystis spp. in 92 (92%) of 100 cattle (samples of heart, diaphragm and oesophagus) in which macroscopically cysts were not observed. Corresponding values for the Sarcozystis species were as follows: single infections 74 (74 %) S. bovicanis, 15 (15 %) for S. bovifelis and 3 (3 %) S. bovihominis; in mixed infections 7 (7 %) S. bovicanis + S. bovihominis, 3 (3 %) S. bovicanis + S. bovifelis, 3 (3 %) S. bovihominis + S. bovifelis and 20 (20 %) S. bovicanis + S. bovihominis + S. bovifelis respectively.

In conclusion, microscopically cysts observed the highest number in oesophagus among samples examined. In this study, Sarcozystis spp. are very common and S. bovicanis is the dominant species in cattle in the Konya region.

Keywords: Cattle, Sarcozystis spp, diagnosis, Konya.

Konya Yöresi Sığırtlarda Sarcozystis Türlerinin Teşhisi

Özet: Bu araştırmada Konya bölgesindeki Sığırtlarda Sarcozystis türlerinin prevalansını tespiti amacıyla trypsin teknigi kullanılarak gerçekleştirilmiştir.

Sığırların kalp, diyafrem, ve özefagusa %92 oranında mikroskobik kistlere rastlanan olup, makroskobik kistler tespit edilememiştir. Kist duvarının yapısına göre üç tıp mikroskobik kist bulunmuş olup, S. bovicanis 74 (%74), S. bovifelis 15 (%15) ve S. bovihominis 3 (%3) oranlarında tespit edilmiştir. Miks olarak ise S. bovicanis + S. bovihominis 7 (%7), S. bovicanis + S. bovifelis3 (%3), S. bovihominis + S. bovifelis 3 (%3) ve S. bovicanis + S. bovihominis + S. bovifelis 20 (%20) oranlarında tespit edilmiştir.

Sonuç olarak; Konya bölgeleri sığırlarında Sarcozystis spp'ye en fazla özefaguslarda rastlanıldığı, en yaygın türün S. bovicanis olduğu tespit edilmiştir.

Anahtar sözcükler: Sığır, Sarcozystis spp, teşhis, Konya.

INTRODUCTION

Sarcozystis is a protozoon parasite that utilises vertebrates as both intermediate and definitive host. Sarcozystis species causing acute and chronic disease are obligator intracellular protozoa with a typical coccidian life cycle consisting of merogony, gamogony and sporogony.

The genus Sarcozystis is composed of 130 species of heteroxenous cyst-forming coccidia with differences in life cycle and pathogenicity. Pathogenic Sarcozystis spp. can cause disease in their intermediate host, in particularly in ruminants.

There are three species of cattle species; S. cruzii (S. bovicanis) of which canine are definitive hosts; S. hirsuta (bovifelis) transmitted by cats and S. hominis (bovihominis) transmitted by man. Sarcozystis infections are distributed world-wide.

The cyst of Sarcozystis spp can be easily identified from cyst wall structure by the trypsin technique. The S. bovicanis and S. bovihominis are microscopic in size. Whereas, those of S. bovifelis may reach a length of several millimeters and are then macroscopically visible.

MATERIALS and METHODS

Materials were obtained from the oesophagus, heart and diaphragm of cattle from slaughtered in Kone abattoir in Konya. The materials were investigated for the presence of Sarcozystis spp. by trypsin technique.

Trypsin technique

Pieces of materials were minced stirred for 20 min at 25°C in a magnetic water bath and then the suspension was decanted and filtered through gauze.

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The cystozooids were isolated from density gradient centrifugation as described in detail³.

RESULTS

Trypsin technique was able to detect Sarcocystis spp. in the 92 (92 %) of 100 cattle (samples of heart, diaphragma and oesophagus) in which macroscopically cysts were not observed.

Corresponding values for the Sarcocystis species were as follows: single infections 74 (74 %) S. bovicanis, 15 (15 %) S. bovifelis and 3 (3 %) S. bovihominis; in mixed infections, 7 (7 %) S. bovicanis + S. bovihominis, 3 (3 %) S. bovicanis + S. bovifelis, 3 (3 %) S. bovihominis + S. bovifelis and 20 (20 %) S. bovicanis + S. bovihominis + S. Bovifelis, respectively.

In conclusion, microscopically cysts observed the highest number in oesophagus among samples examined. Samples examined were summarised in Table 1.

Table 1. Samples examined.

<table>
<thead>
<tr>
<th>Sample examined</th>
<th>Number of samples</th>
<th>Numbers positive</th>
<th>Prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oesophagus</td>
<td>100</td>
<td>92</td>
<td>92 %</td>
</tr>
<tr>
<td>Heart</td>
<td>100</td>
<td>84</td>
<td>84 %</td>
</tr>
<tr>
<td>Diaphragm</td>
<td>100</td>
<td>63</td>
<td>63 %</td>
</tr>
</tbody>
</table>

DISCUSSION

Sarcosporidiosis can result in poor productivity, anaemia, inappetence, weight loss, and fever. Some animals show neurological signs, especially in pregnant ewes. It has been reported that experimental infection with microscopic Sarcocystis species can lead to abortion, fetal death, and stillbirth³. During the chronic phase of the infection, weight gain and wool growth can be affected³⁵,³⁶.

Diagnosis of sarcocyst species is based on visualisation of the cysts and their features³¹-³⁴. Identification of the cysts is performed using trypsin technique, trichinoscopic and hystological examinations. Serological tests cannot differentiate between Sarcocystis species because of antigenic cross reactivity. This is only possible during the sate phase of infection, after tissue cysts have developed and can be differentiated macroscopically or microscopically by their sizes and cyst walls. Since the differentiation of Sarcocystis species is only possible by microscopic examination of post mortem cysts, and since serological tests are not species specific, a diagnostic probe for the detection and differentiation of Sarcocystis species would be of great value³⁷. Epidemiological data is a prerequisite for the development of measures such as farm management, treatment schedules or potential vaccines. Also, presently available tests to diagnose sarcocystosis require to the animal to be slaughtered for a post mortem. Of these, the trypsin technique is preferred to the others³⁸,³⁷.

In these study, the trypsin technique is evaluated to determine Sarcocyst spp in cattle.

The prevalence of bovine Sarcosporidiosis is reported to ranges from 63.1 % to 100 % microscopic cyst and to be 6.8 % macroscopic cyst³⁹,⁴⁰. The prevalence of microscopic cysts and macroscopic cysts is reported to be 55-100 % and 4 %, respectively, in cattle in Turkey⁴¹.

In the present study, 92 % of cattle examined were determined to carry microscopic cysts, but no macroscopic cyst was observed. The high prevalence of Sarcocystis (92%) determined in this study cattle is correspondence with other studies⁴²-⁴⁵.

In a previous study carried out in Elazığ, the distribution of Sarcocystis spp in cattle was reported as follow: S. bovicanis 56 %, 70 %, 65.6 %, S bovihominis 48 %, 51.2 %, 63.3 %, S. bovifelis 42 %, 43.7 %, 34.5 % in the cattle examined, 25 % and 19.6 % these cattle only by S. bovicanis, 87.1 % and 19.7 % only by S. bovihominis and 2.5 % and 7.9 % only by S. bovifelis. On the other hand, of the cattle 100 % and 26.1 % with S. bovicanis and S. bovihominis; 8.7 % with S. bovicanis and S. bovifelis; 6.2 % and 7.4 % with S. bovihominis and S. bovifelis and 26.2 % and 10.5 % with S. bovicanis, S. bovihominis and S. bovifelis, were reported to be infected concurrently⁴³.

In this study, corresponding values for the Sarcocystis species were as follows: single infections 74 (74 %) for S. bovicanis, 15 (15 %) for S. bovifelis and 3 (3 %) for S. bovihominis; in mixed infections, 7 (7 %) for S. bovicanis + S. bovihominis, 3 (3 %) for S. bovicanis + S. bovifelis, 3 (3 %) S. bovihominis + S. bovifelis and 20 (20 %) S. bovicanis + S. bovihominis + S. Bovifelis, respectively.
It has been various studies that reported Sarcozystis cysts are usually localized in oesophagus however, in one study, they were more common in diaphragma.

In current study, microcysts were usually seen in oesophagus, which in agreement with other studies.

In conclusion, microscopically cysts observed the highest number in oesophagus among samples examined. In this study, Sarcozystis spp. are very common in cattle and S. bovis is the dominant species in the Konya region.

REFERENCES


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