Prevalence of Fungi in the Conjunctival Sac of Clinically Normal Sheep

Abdullah ARAGHI-SOOREH 1, Vahid HASSANPOUR 2

1 Department of Clinical Sciences, Faculty of Veterinary Medicine, Urmia Branch, Islamic Azad University, Urmia, IRAN
2 Graduated in Veterinary Medicine, Faculty of Veterinary Medicine, Urmia Branch, Islamic Azad University, Urmia, IRAN

Abstract

Conjunctival swabs were obtained from both eyes of 50 healthy sheep to identify the fungal flora. Data were analyzed for effect of age and sex. Out of 100 samples cultured, 18 (18%) showed fungal growth with predominance of the genus Cladosporium (38.89%). Other isolated fungal genera were Penicillium (16.67%), Rhodotorula (16.67%), Aspergillus (16.67%) and Curvularia (11.10%). There was no significant effect of sex and age on frequency of fungal isolation. Results showed that fungi are not prevalent on the ocular surface of healthy sheep.

Keywords: Fungal flora, Eye, Sheep, Cladosporium spp.

INTRODUCTION

In many animal species fungi are considered as a part of the normal ocular flora, but their existence can turn to pathogenic state when defense mechanisms of the outer eye are damaged. Knowledge on the fungal species which are most likely encountered in the conjunctival sac is important to select an antifungal drug as initial empirical treatment of corneal mycoses [1,2]. There is a paucity of information on the ocular fungal flora of ruminants [3-5], especially sheep [6]. Reportedly, Cladosporium spp, Penicillium spp and Mucor spp. are the predominant species. In order to increase knowledge of the ovine ocular fungal flora and to determine the effect of sex and age on the prevalence of isolates, we conducted present study on healthy sheep.

MATERIAL and METHODS

Fifty clinically healthy fat-tailed sheep presented at the Urmia abattoir (Iran) from May to July 2011 were swabbed. Animals were from both sexes (26 males and 24 females) and divided into two age groups based on dental formula; A: Under 2 years old (34.68%) and B: above 2 years old (16.32%).

Samples were taken from the lower conjunctival sac of both eyes (n=100) using dry sterile swabs per eye, avoiding the eyelid margins and eyelashes. Swabs were placed into sterile tubes containing 2 ml normal saline and immediately transferred to the laboratory in a chilled box. Samples were plated onto Sabouraud dextrose agar (Merck, Darmstadt, Germany) and malt extract agar (Quelab, Montreal, Canada) and incubated at 25°C for 3 weeks. Identification of isolates was achieved to the genus level on the basis of macroscopic and microscopic features [7].

The effect of age and sex on the frequency of fungal isolation was determined using Fischer’s exact test. Significance was set at P<0.05.
RESULTS

Five genera of fungi were cultured from a total of 13 sheep (26%) and 18 eyes. The fungi isolated and the isolation rates are listed in Table 1. Cladosporium spp (38.89%) was the most frequent isolate. Single fungi were isolated from each eye.

According to statistical analysis (Table 2, Table 3), the prevalence of fungal isolates did not show significant differences between sexes and age groups (P>0.05).

<table>
<thead>
<tr>
<th>Fungi</th>
<th>No. of Positive Sheep (%)</th>
<th>No. of Positive Eyes (%)</th>
<th>No. of Isolates (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cladosporium spp.</td>
<td>6 (12)</td>
<td>7 (7)</td>
<td>7 (38.89%)</td>
</tr>
<tr>
<td>Penicillium spp.</td>
<td>3 (6)</td>
<td>3 (3)</td>
<td>3 (16.67%)</td>
</tr>
<tr>
<td>Rhodotorula spp.</td>
<td>3 (6)</td>
<td>3 (3)</td>
<td>3 (16.67%)</td>
</tr>
<tr>
<td>Aspergillus spp.</td>
<td>3 (6)</td>
<td>3 (3)</td>
<td>3 (16.67%)</td>
</tr>
<tr>
<td>Curvularia spp.</td>
<td>2 (4)</td>
<td>2 (2)</td>
<td>2 (11.10%)</td>
</tr>
</tbody>
</table>

Table 1. Fungal genera, frequency of species isolated and number of positive culture eyes and sheep

<table>
<thead>
<tr>
<th>Fungi</th>
<th>No. of Isolates (%)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cladosporium</td>
<td>3</td>
<td>0.190</td>
</tr>
<tr>
<td>Penicillium</td>
<td>2</td>
<td>0.999</td>
</tr>
<tr>
<td>Rhodotorula</td>
<td>2</td>
<td>0.999</td>
</tr>
<tr>
<td>Aspergillus</td>
<td>1</td>
<td>0.236</td>
</tr>
<tr>
<td>Curvularia</td>
<td>1</td>
<td>0.542</td>
</tr>
</tbody>
</table>

Table 2. Frequency analysis of the conjunctival fungal isolates in relation to sex of sheep

In the majority of studies on equine species Aspergillus spp is the most common isolate of the normal conjunctiva \([2,8-10]\), but in domestic carnivores \([3]\) and ruminants including cattle \([3,4]\) and goats \([5]\) generally Cladosporium spp and Penicillium spp were reported to be predominant. In our study, genus Cladosporium (38.89%) also reported as the most frequent isolates of conjunctiva. This finding was not similar to that reported for sheep in Italy \([8]\), in which Mucor spp predominated (49%). It has been suggested that fungi are transitory inhabitants of the eye surface, and their prevalence can thus be influenced by geographic conditions \([1,11]\).

In the present study there was no significant difference in isolation rates of fungi between sexes and age groups. In various studies have been showed that prevalence of the normal eye flora could be affected by these two host factors, as in male horses \([1]\), male goats \([3]\), female pigs \([12]\) and younger horses \([11]\) frequency of isolates were significantly higher.

Fungi are not prevalent on the ocular surface of healthy sheep. This could be considered as a reason for paucity of keratomycosis in this species.

REFERENCES


