RESEARCH COMMUNICATION

SEROLOGICAL EVIDENCE OF Q FEVER IN CATTLE IN MALAWI

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ABSTRACT


The serological prevalence of Coxiella burnetii in cattle in Malawi is unknown. Serum samples from 200 Malawian zebu cattle were tested for C. burnetii antibodies using the complement fixation test. The percentage of positive and suspicious titres was 1.5% and 5% respectively.

INTRODUCTION

Since its recognition as an agent of disease in man in 1937, epidemiological studies of C. burnetii have been undertaken in many countries throughout the world (Babudieri, 1959; Roth & Bauer, 1986; Aitken, Bogel, Crae, Edlinger, Houwers, Krauss, Rady, Rehacek, Schiefer, Schmeir, Tarasevich & Tringali, 1987).

It has been shown that C. burnetii is endemic in many African countries (Hummel, 1976; Schutte, Kurz, Barnard & Roux, 1976), but there are no records on the occurrence of C. burnetii in Malawi. Q fever, caused by C. burnetii is of limited economic importance, but the infected animals represent a potential hazard to human health (Babudieri, 1959; Gear, 1980).

The aim of this study was to determine the presence of C. burnetii antibodies in cattle in Malawi.

MATERIALS AND METHODS

Two hundred serum samples were obtained at the main abattoirs in Malawi and were collected in vacuum tubes at slaughter. The cattle were predominantly male animals, of at least 18 months age and originated from throughout the northern and central areas. Samples were refrigerated at approximately 4°C for 14 days, before being flown to the Republic of South Africa, where they were tested at the Onderstepoort Veterinary Research Institute.

Each sample was tested for antibodies to C. burnetii using the complement fixation test as described by Herr, Hochzermeyer, Te Brugge, Williamson, Roos & Schiele. 1985. Titres equal to and greater than 30 South African units per ml (SAU/ml) (Herr et al. 1985) were regarded as positive.

RESULTS

Titres of 18–24 SAU/ml were regarded as suspicious. Positive control serum was used when testing each batch of sera with commercial antigen.

TABLE 1. The distribution of antibody titres to C. burnetii

<table>
<thead>
<tr>
<th>$\text{SAU/ml}$</th>
<th>&lt;18</th>
<th>18</th>
<th>21</th>
<th>24</th>
<th>49</th>
<th>A/C*</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of samples</td>
<td>183</td>
<td>7</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>* A/C = Anti-complementary</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

DISCUSSION

Babudieri (1959) states that Q fever has been found in animals and man in most of the countries in which it has been looked for. This was confirmed as far as Malawi is concerned.

The results of this small pilot study indicate that 13 animals reacted positively or suspiciously for Q fever. The proportion of the cattle reacting positively or suspiciously as a percentage of animals tested, is 6.5%. Q fever’s prevalence in Malawi therefore seems to be similar to that in other central and southern African countries (Hummel, 1976; Gum-mow, Poersramper & Herr, 1987).

C. burnetii is believed to cause inapparent infections in both wild and domestic animals (Babudieri, 1959; Gear, 1980; Aitken et al., 1987). Q fever is not regarded as an economically important disease in domestic animals, but perinatal deaths in sheep, goats and cattle as well as abortions in sheep and goats have been ascribed to C. burnetii (Schutte et al., 1976).

A large percentage of the Malawian human population are resident in the rural areas and they are closely associated with livestock and wild animals. This creates an ideal situation for the transmission of the disease. Human infection, which most usually comes about by inhalation, has ample opportunity to occur in a country where the disease is endemic among domestic animals (Babudieri, 1959). C. burnetii is extremely infectious for humans (Gear, 1980). It assumes a sporadic nature, or involves small groups of people living around barns or pastures used by infected animals, partly because a part of the population is already immune from earlier infections (Babudieri, 1959). It can, however, adopt an epidemic form when infected animals or herds come in contact with susceptible humans (Babudieri, 1959). Cattle in Malawi positive for Q fever therefore represent a potential hazard to human health (Gear, 1980; Aitken et al., 1987).

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*Sterile blood collection tubes manufactured by Radem Laboratory Equipment CC, Wyberg, Sandton*
*Q fever antigen for CFT, Oras 04/05 Lot 411567A Behringwerke AG, Marburg, W. Germany*
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