LEPTOSPIRE INFECTION IN SWINE OF THE RIBEIRÃO PRETO REGION, BRAZIL
INFECÇÃO LEPTOSPIRÍCA EM SUINOS DA REGIÃO DE RIBEIRÃO PRETO, BRASIL

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ABSTRACT

Sera of 262 swines from six townships in the Ribeirão Preto region, Brazil, were examined by rapid microagglutinations test for leptospirae. Two hundred and twenty-six sera were collected from sowes, 16 from boars, and 20 of slaughtered animals. The results showed that 13.71 % of the sows, 13.75% of the boars and 20.00% of the slaughtered swine were positive. The highest were found in two positive sera for serotypes pyrogenes and jennavi in the dilution 1:1,600. Statistical analysis showed that the sex and breeding phase did not significantly affect frequency of leptospire infection in swine.

Key-words: Leptospire - swine.

1. INTRODUCTION
Leptospiríasis is known to be one of the most prevalent and probably the most harmful zoonoses (WORLD HEALTH ORGANIZATION 12). Among domestic animals, swine greatly contribute to the spreading of leptospires among animals and humans (MICHUA & CAMPBEL 16). In Brazil, toxologic surveys have shown that the frequency of leptospiríasis among swine varies between 5.29% and 82.4% in different regions, and that the most frequent serotypes also vary (SANTA ROSA et all 17; REIS et all 18; SANTA ROSA et all 19; CORDEIRO et all 20; AVILA et all 21). Similar surveys have been carried out in other countries (MELENE 22; HARRINGTON Jr 1; HIGGINS & CAYOVETTE 23; JENKINS et all 24; HIGGINS et all 25). The objective of the present investigation, carried out in the Ribeirão Preto region on swine of reproductive age or slaughtered in abattoirs, was to study the frequency of leptospiríasis on the basis of breed, sex and breeding phase of the animals.

2. MATERIAL AND METHODS
A total of 262 blood samples were collected from swine from six townships in the Ribeirão Preto region. Twenty of these samples were obtained from animals slaughtered in an abattoir, and the remainder from swine belonging to different farms. A card was filled out for each animal with data concerning breed, sex, breeding phase and any clinical symptoms detected. Additional data on breeding system, feeding, vaccinations and other animal species present, rodents in particular, were obtained from the management of each farm.

Sera were centrifuged at 1500 rpm for 15 minutes, placed in 10 ml sterilized flask and stored frozen at −20°C until the time for use. The sera were titrated by the rapid microagglutination test of RYU 26, using live leptospirae cultures of the following serotypes: andamana, australis, autumnalis, ballum, bataviae, braziliensis, canicola, whittcor, butembo, grippotyphosa, wolffi, icterohaemorrhagic, javanca, panama, pomona, pyrogenes, shermani, and tarassovi. The cultures had been incubated 4 to 14 days at 28°C.

The results were analyzed by the chi-square (X²) test and the following characteristics were analyzed: breeding phase, sex, and breed.

3. RESULTS
As shown in Table I, examination of 262 serum samples from six different townsips in the Ribeirão Preto region by the fast microagglutination test showed 38 (13.5%) positive reactions for one or more leptospirae serotype. Table II shows the frequency of sera with positive reac-

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tions to the serotype used and the results of the determina-
tion of the titer for each serum.

It can be seen in Table II that of the 262 pigs examined, 226 were darts of reproductive age, 16 were sires, and 20 animals slaughtered at an abattoir, with respective peren-
tages of leptospirial infection of 13.7, 18.75 and 20.00%.
The number and percentage of sera reacting positively
to the fast microagglutination tests for leptospires, by
breed and sex, are shown in Tables IV and V, respectively.

According to the results given in Tables III, IV and V, the
X² values calculated for breeding phase, breed and sex
were 0.8226, 1.4058 and 0.4482, respectively, indicating
no significant differences between variables, since they
did not exceed the critical X² values for the rejection level
tabulated for 0.05, with 2, 3, and 1 degree of freedom,
respectively.

4. – DISCUSSION

The frequency of agglutinins among 262 pigs from six
different townships in the Ribeirão Preto region, State of
São Paulo, was 14.50%. Table I shows that, among the six
townships studied, only Patrocínio Paulista had no positively
reacting swine. We should remember, however, that the
number of sera from this township was small. This could also
be the reason why the Sertãozinho township showed the
highest percentage of positively reacting animals.

The javanica and pyrogenes serotypes showed the hi-
ghest percentages of positive reactions (Table III). Even
though they are not normally considered important in the
epidemiology of swine leptospirosis, they are sometimes
encountered during serologic surveys (Alston & Bromm).

Sera of S. legended, the third most frequent in the pre-
sent survey, is considered pathogenic by most authors.
Cases of leptospirosis caused by this serotype, however,
have been reported among sewer workers (Correa et al).
It should be pointed out that the swine studied in the present investigation exhibited no clinical sign of
infection, but may have represented carriers of infection
for handlers and slaughterers.

The pomona serotype has been frequently reported in
serologic surveys of leptospire infection in swine. The
1.52% index in the present investigation, although relati-
vely low, permits us to confirm its importance since this
serotype has already been isolated in outbreaks of abortion
among swine of the States of São Paulo (Santa ROSA et
al) and of Santa Catarina (SANTA ROSA et al)"

The report by McELEAN shows that the frequency of anti-
leptospire antibodies increases with age, was corroborated
by the present results, since the positivity rate encounte-
red among darts and sires was not statistically different
from that encountered among slaughtered swine, whose
ages did not exceed one year.

On the basis of these results, we may conclude that
breed, sex and breeding phase do not significantly effect
the frequency of leptospire infection among swine.

<table>
<thead>
<tr>
<th>Township</th>
<th>No. of sera examined</th>
<th>No. Positive</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alinhópolis</td>
<td>83</td>
<td>10</td>
<td>12.04</td>
</tr>
<tr>
<td>Odândia</td>
<td>89</td>
<td>09</td>
<td>10.11</td>
</tr>
<tr>
<td>Patrocínio Paulista</td>
<td>05</td>
<td>00</td>
<td>00.00</td>
</tr>
<tr>
<td>Ribeirão Preto</td>
<td>25</td>
<td>06</td>
<td>24.00</td>
</tr>
<tr>
<td>Serra</td>
<td>55</td>
<td>11</td>
<td>20.00</td>
</tr>
<tr>
<td>Sertãozinho</td>
<td>05</td>
<td>02</td>
<td>40.00</td>
</tr>
</tbody>
</table>

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TABLE II – Percentage and final titer in 262 sera of swine from the Ribeirão Preto region, State of São Paulo, that reacted positively to the rapid microagglutination test for leptospiroses.

<table>
<thead>
<tr>
<th>Serotype</th>
<th>Positive No.</th>
<th>1:100</th>
<th>1:200</th>
<th>1:400</th>
<th>1:800</th>
<th>1:1600</th>
</tr>
</thead>
<tbody>
<tr>
<td>Andamana</td>
<td>06</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Bucemiño</td>
<td>04</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Icterohaemorragiae</td>
<td>03</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Javanica</td>
<td>13</td>
<td>4</td>
<td>6</td>
<td>5</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Panama</td>
<td>04</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Pomona</td>
<td>04</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Pyrogenes</td>
<td>11</td>
<td>4</td>
<td>19</td>
<td>5</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Shermani</td>
<td>01</td>
<td>5</td>
<td>38</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TABLE III – Number and percentage of sera reacting positively to rapid microagglutination for leptospiroses in 262 swines from the Ribeirão Preto region, State of São Paulo, at different breeding phases.

<table>
<thead>
<tr>
<th>Breeding phase</th>
<th>No. of sera examined</th>
<th>Positive No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dams</td>
<td>226</td>
<td>31</td>
<td>13.21</td>
</tr>
<tr>
<td>Sires</td>
<td>16</td>
<td>03</td>
<td>18.75</td>
</tr>
<tr>
<td>Slaughtered</td>
<td>20</td>
<td>04</td>
<td>20.00</td>
</tr>
<tr>
<td>Total</td>
<td>262</td>
<td>38</td>
<td>14.50</td>
</tr>
</tbody>
</table>

TABLE IV – Number and percentage of sera reacting positively to rapid microagglutination for leptospiroses in 242 swine from different farms in the Ribeirão Preto region, State of São Paulo, by breed.

<table>
<thead>
<tr>
<th>Breed</th>
<th>No. of sera examined</th>
<th>Positive No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Landrace</td>
<td>76</td>
<td>10</td>
<td>13.45</td>
</tr>
<tr>
<td>Large white</td>
<td>86</td>
<td>15</td>
<td>17.44</td>
</tr>
<tr>
<td>Doroc</td>
<td>08</td>
<td>01</td>
<td>12.50</td>
</tr>
<tr>
<td>Crossbred</td>
<td>72</td>
<td>08</td>
<td>14.71</td>
</tr>
<tr>
<td>Total</td>
<td>242</td>
<td>34</td>
<td>14.64</td>
</tr>
</tbody>
</table>

TABLE V – Number and percentage of sera reacting positively to rapid microagglutination for leptospiroses in 262 swine from the Ribeirão Preto region, State of São Paulo, by sex.

<table>
<thead>
<tr>
<th>Sex</th>
<th>No. of sera examined</th>
<th>Positive No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>36</td>
<td>07</td>
<td>19.44</td>
</tr>
<tr>
<td>Females</td>
<td>266</td>
<td>31</td>
<td>13.71</td>
</tr>
<tr>
<td>Total</td>
<td>262</td>
<td>38</td>
<td>14.50</td>
</tr>
</tbody>
</table>
RESUMO

Em estudo epidemiológico visando determinar a frequência de infecção por leptospiroses em suínos da região de Ribeirão Preto, Brasil, soros de 262 suínos de 17 municípios foram examinados através do teste de microaglutinação rápida. Do total de soros examinados, 226 eram de matrizes em reprodução, 16 eram de reprodutores e 20 eram de animais abatidos em masmorras, saídos da fase de “circulação”; os quais mostraram porcentagens de 13,7%, 18,7% e 20,6%, respectivamente, de infecção leptospirosa, fornecendo um índice global de positividade de 14,7%. Os estilos agravantes mais elevados foram encontrados em dois soros reagentes para os soropós pyrogenes e javanica na diluição de 1:1.600. Pela análise estatística, verificou-se que a raça, o sexo e a fase de criação não influenciaram significativamente na frequência da infecção leptospirosa em suínos.

Palavras-chave: Leptospira - suino.

REFERENCES


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