Campylobacter intestinal carriage among stray and pet dogs

Keywords: Campylobacter, isolation. Disease reservoirs. Feces, microbiology.
Among the dogs with known owners the distribution of the biotypes of *C. jejuni* and *C. coli* was more restricted. Only *C. jejuni* biotypes I and II (55.6% and 44.4% respectively) and *C. coli* biotype II (100%) were isolated from these animals.

Table shows the distribution of *Campylobacter* isolates among both groups of dogs.

<table>
<thead>
<tr>
<th>Biotypes</th>
<th>N°</th>
<th>%</th>
<th>C. jejuni</th>
<th>N°</th>
<th>%</th>
<th>C. coli</th>
<th>N°</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stray dogs</td>
<td>54</td>
<td>36.0</td>
<td>II</td>
<td>21</td>
<td>38.9</td>
<td>I</td>
<td>14</td>
<td>60.9</td>
</tr>
<tr>
<td>n = 150</td>
<td></td>
<td></td>
<td>III</td>
<td>11</td>
<td>20.4</td>
<td>II</td>
<td>9</td>
<td>39.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>IV</td>
<td>6</td>
<td>11.1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pet dogs</td>
<td>9</td>
<td>14.1</td>
<td>I</td>
<td>5</td>
<td>55.6</td>
<td></td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>n = 64</td>
<td></td>
<td></td>
<td>II</td>
<td>4</td>
<td>44.4</td>
<td>II</td>
<td>5</td>
<td>100.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>III</td>
<td>0</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>IV</td>
<td>0</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>n = 214</td>
<td>63</td>
<td>29.4</td>
<td>28</td>
<td>13.1</td>
<td>91</td>
<td>42.5</td>
<td></td>
</tr>
</tbody>
</table>

* *p<0.01

Discussion

Infected animals may be involved in the spread of *Campylobacter* species to man\(^2\). Dogs and other companion animals have been shown to be sources of infection\(^{1,2,13,14,16}\).

In the present study, the frequency of stray dogs harboring *Campylobacter* species was of 51.3%. This value is similar to that obtained by Simpson et al\(^2\) and Bruce and Zochowski \(^3\) for the same type of animals. On the other hand, as Simpson et al\(^13\) have found, this study showed that the number of animals with *Campylobacter* in their feces was significantly greater in stray than in pet dogs. However, a higher number of carriers was found among pets than in the study of Simpson et al\(^13\).

Fox et al\(^9\) stated that the isolation rates of *Campylobacter* in certain dog populations may reflect the inadequate environmental sanitation prevailing where the animals are living or maintained. So when sanitation and housing are often less than ideal, the animals have considerable opportunities for cross-contamination.

When Lior’s\(^10\) biotyping scheme was applied to *Campylobacter* strains isolated from stray dogs, the 4 biotypes described for *C. jejuni* and the 2 for *C. coli* were found. Among the strains isolated from pet dogs, the biotype distribution for both *Campylobacter* species was more restricted. Only *C. jejuni* biotypes I and II and *C. coli* biotype II were found.

The latter biotypes are the most frequently isolated from cases of human diarrhea in Valdivia city\(^*\) and in Santiago city\(^8\). These findings suggest that pet dogs could be associated, as sources of infection in cases of diarrhea. This fact has already been described in developed countries\(^{1,12,14,16}\). However, in developing countries there are no documented data linking pet dogs with known cases of *Campylobacter* enteritis.

Stray dogs are animals that are not in frequent contact with human beings thus suggesting that their participation as sources of infection is limited and that they have greater importance as spreaders of *Campylobacter spp.* to the environment. At the same time, a contaminated environment could provide many opportunities for the transmission of *Campylobacter spp.* to birds, mammals and humans\(^2\). In Valdivia, the 4 biotypes of *C. jejuni* and the 2 of *C. coli* were isolated from surface water\(^7\).

The high prevalence of dogs which are intestinal carriers, together with the wide distribution of *C. jejuni* and *C. coli* biotypes among stray dogs, as well as our findings in surface water\(^7\) suggest that environmental conditions play an important role in this epidemiological picture. Similar findings have been observed in developing countries among children living in poor, crowded and contaminated urban slums\(^11\).

This is probably, an epidemiological aspect that could also be found in relation to other animal populations. Therefore further studies must be undertaken with a view to clarifying the role of environmental sanitary conditions in the spreading of *Campylobacter* species and the detection of all the links involved in their transmission.

companhia em confinamento permanente. Espécies de *Campylobacter* foram isoladas mais frequentemente (p<0,01) dos cães vadios (51,3%) do que dos cães de companhia (21,9%). Todos os biotipos descritos por Lior para *C. jejuni* e *C. coli* foram encontrados entre as amostras isoladas dos cães vadios. Nas amostras isoladas dos cães mantidos em confinamento permanente somente foram encontrados os biotipos I e II de *C. jejuni* e o biotipo II do *C. coli*. Salienta-se a necessidade de realizar outros estudos para estabelecer a relação entre as condições de saneamento ambiental e a disseminação das espécies termotolerantes de *Campylobacter*.

Descritores: *Campylobacter*, isolamento. Reservatórios de doenças.

References


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