CHICKEN AS POTENTIAL CONTAMINATION SOURCE OF CAMPYLOBACTER LARI IN IQUITOS, PERU.

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SUMMARY

In order to know the importance of chicken as natural reservoir of Campylobacter lari in Iquitos, Peru, samples were obtained by cloacal swabs from 200 chickens and immediately placed into a semisolid enrichment medium; these were streaked on modified Skirrow Agar. The organism was isolated from 21 (10.5%) samples, corresponding 58.8% to biovar I and 41.2% to biovar II (Lior scheme). The results provide evidence that chicken appear to be prominent reservoirs of Campylobacter lari in Iquitos.

KEYWORDS: Campylobacter lari; Chicken; Reservoir.

INTRODUCTION

Diarrhoeal disease is an important factor in the infection-malnutrition cycle of infants and young children in Peru. The classical thermotolerant species of Campylobacter have become recognized as an important cause of acute diarrhoeal disease, but C. jejuni ssp. jejuni and C. coli are considered the most important because human illness associated with C. lari (formerly C. laridis) is infrequently recognized. However, even when this bacteria has been recovered from humans with C. lari-associated enteritis, its role as an enteric pathogen and their virulence factors have not been clearly established.

C. lari was described as a nalidixic acid-resistant thermophilic Campylobacter (NARTC) by SKIRROW and BENJAMIN. The first human isolates were reported to be from the faeces of four asymptomatic individuals, but posteriorly, in sporadic cases, faecal isolation of the organism was associated with an enteric illness.

The epidemiology of human illness associated with this agent remains uncertain. C. lari was chiefly recovered from the cloacal contents of wild herring gulls (Larus argentatus). Some isolates were subsequently obtained from a variety of birds and other animals. However, unlike C. jejuni ssp. jejuni and C. coli, C. lari appear to become uncommon isolate from domestic animals.

Chickens may be important reservoirs of C. lari in Peru; consequently, the purpose of this study was to determine the presence of C. lari in these birds.

MATERIALS AND METHODS

Samples were obtained by cloacal swabs from 200 free-ranging domestic chickens living in different peri-urban zones of Iquitos city (in the Peruvian jungle region). All samples were immediately placed into the

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semisolid enrichment medium proposed by FERNANDEZ and streaked on modified Skirrow plates. These were incubated at 42°C for 48 h, in microaerophilic conditions.

Suspected colonies were identified morphologically (Gram stain) and biochemical characterization of the isolates was done using the differential tests proposed by LIOR and GOOSSENS & BUTZLER. Antimicrobial susceptibility to nalidixic acid (30 μg) and cephalothin (30 μg) was determined by disc diffusion assay on FBP-blood agar incubated at the same conditions mentioned above.

RESULTS

After 48 h of incubation, some cultures showed some smooth, translucent, spreading colonies on modified Skirrow medium. Gram stain revealed curved Gram-negative bacilli with typical appearance of Campylobacter spp. Colonies were screened for campylobacters using the oxidase and catalase tests, being both positive. From the 200 chickens studied, 21 (10.5%) harbored C. lari in their intestinal tract (Table 1). Only 17 strains were analyzed for biovars (Lior scheme) because 4 isolates were lost during the freezing process used to preserve them in freezing medium before the tests were done. Then (58.8%) of the strains corresponded to biovar I and 7 (41.2%) to biovar II (Table 1).

<table>
<thead>
<tr>
<th>C. lari</th>
<th>Number (%) of</th>
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<tbody>
<tr>
<td></td>
<td>Chicken</td>
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<tr>
<td>Present</td>
<td>21 (10.5)</td>
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<tr>
<td>Absent</td>
<td>179 (89.5)</td>
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* Calculated with 17 strains.

DISCUSSION

Previous reports, have indicated that thermotolerant species of Campylobacter are commensals in the intestinal tract of poultry, being chickens frequently associated as infection sources for human beings.

The isolation rate of C. lari found in this study (10.5%) is higher than that reported by KWiatek et al. in Poland (6.1%). In Latin America, this microorganism was isolated from cattle and sewage in Brazil, from aquatic birds and from one documented diarrhea episode affecting a chicken eviscerator in Chile, and from chicken meat in Costa Rica.

The key feature for primary differentiating C. lari from the other classical thermotolerant species of the genus is the resistance to a 30 μg disk of nalidixic acid. However, some investigators have identified rare strains of C. jejuni resistant to this antibiotic. Indoxyl acetate hydrolysis and H2S production on iron metabisulfite medium are complementary tests that, showing a good level of discrimination, are useful for distinguishing C. lari from C. jejuni and C. coli.

Because large number of Campylobacter spp. are released from intestinal content during the defeathering and eviscerating operations, they could be present, also in large numbers, contaminating poultry carcasses. Transmission of Campylobacter spp. to humans via these food products is well established. Moreover, GRADOS et al. showed that chickens maintained in close association with humans represent a potential source of Campylobacter infection.

Most of the chicken faecal samples submitted to our study come from the peri-urban area, where the risk of acquiring viable Campylobacter spp. is increased because of the close association observed between humans and birds in similar places. Besides, the house floors are usually made of dirt or unfinished concrete, so the complete elimination of chicken faeces is difficult to achieve, contributing to increase the infection risks.

Despite further clinical and epidemiological studies are required to better define the role of C. lari in human disease, our data provide evidence that chicken appear to be prominent reservoir of C. lari in Iquitos. That should remind us to search for this microorganism in gastroenteritis cases, specially when the patient has close contact with chickens.

RESUMO

Frangos como fonte potencial de contaminação por Campylobacter lari em Iquitos, Peru.

Com o objetivo de conhecer a importância dos frangos como reservatório natural de Campylobacter
lari na cidade de Iquitos, Perú, foram estudadas amostras cloacais obtidas de 200 aves. Cada amostra foi semeadas em meio de enriquecimento semi-sólido e no ágar de Skirrow modificado. C. lari foi isolado em 21 (10,5%) amostras. Destes, 58,8% corresponderam ao biotipo I e 41,2% ao biotipo II do esquema de Liur. Os resultados obtidos sugerem que os frangos podem ser um importante reservatório de C. lari em Iquitos, Perú.

REFERENCES


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