

OCCURRENCE OF *CAMPYLOBACTER JEJUNI* IN DOG FAECES FROM THE STREETS OF A SOUTHERN CHILEAN CITY (1)

H. FERNANDEZ (2) & V. ARNES (2)

SUMMARY

Dog faeces collected from the streets of a southern Chilean city were cultured on selective media for thermophilic campylobacters. *Campylobacter jejuni* (bio-type 1) was isolated from 53 (35.3%) of 150 samples. The use of an enrichment medium enhanced in 20.8% the isolation rate of this bacteria.

KEY WORDS: *Campylobacter jejuni*; Occurrence in dog faeces — Chile.

INTRODUCTION

Campylobacter jejuni is now world-wide recognized as a zoonotic agent of bacterial diarrhoea in human beings^{2,12}. Many domestic animals are intestinal carriers of these bacteria and could be a probable source of human infection^{7,12}. Dogs, particularly puppies, may be responsible for the transmission of *Campylobacter* to human contacts. *Campylobacter* isolation rates varies between 6-52.2% depending on the group of dogs studied. Stray and kennel dogs show the highest frequencies of these bacteria in their faeces^{10,12}. In southern Chile, the isolation rate of *Campylobacter* was 51% in the first semester 1984⁴.

The aim of this study was to determine the incidence of *C. jejuni* in dog faeces collected from the streets of a southern Chilean city and the role that this biological material plays as a possible source of *Campylobacter* infection.

MATERIAL AND METHODS

During a four month period from April to July 1985, 150 samples of dog faeces were collected from the streets of Valdivia, a southern Chilean city (southern latitude 39°48'; 140,000 habitants). All the samples examined were

freshlooking faeces and each specimen was inoculated directly onto Skirrow's campylobacter selective medium¹² and into a semi-solid enrichment medium containing per liter: brucella broth 28 g, agar 1.6 g, distilled water 950 ml, horse blood 50 ml, polymixin B sulphate 2,500 i.u., rifampicin 10 mg and trimethoprim lactate 5 mg. After overnight incubation the enrichment medium was subcultured onto Skirrow's medium. All cultures were incubated at 43°C in a microaerobic atmosphere using the GasPak system w/o catalizator. Plates were examined after 48 h and Gram stain, oxidase and catalase reactions were done from the suspected colonies. All *Campylobacter* isolates were biotyped using the scheme proposed by SKIRROW & BENJAMIN¹³.

RESULTS

The results obtained show that 53 (35.3%) out 150 dog faeces examined yielded *C. jejuni*. The enrichment procedure enhanced the isolation rate in 20.8%. From the 53 isolates, 42 were direct plate positive/enrichment positive and 11 were made with the help of the enrichment procedure.

C. jejuni biotype 1 was the only one isolated. We did not found the other thermophilic campylobacter biotypes.

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(2) Institute of Clinical Microbiology, Universidad Austral de Chile, Valdivia — Chile

DISCUSSION

Our results show that the incidence of *C. jejuni* in dog faeces collected in the streets of our city was relatively high (35.3%). They agree with the studies of RICHARDSON & KOORNHOF⁹ who reported that 36% of freshly voided dog faeces collected from pavements yielded *Campylobacter*. However, the frequency of contaminated faeces is lower than the one observed when dogs are directly sampled? (50%)⁴. WRIGHT¹⁵ reported that 4.6% of the dog faeces collected in a public park were contaminated with *Campylobacter*. The difference could be explained if we take into consideration that most of the samples studied by WRIGHT¹⁵ were obtained from animals belonging to knew owners which may indicate a good standard of care. Although most of the dogs seen in the streets of our city could have an owner, they can not be differentiated from true stray dogs because they loiterer habits are reflecting a bad standard of care. Remarkable differences exist in the incidence of intestinal carriage of *Campylobacter* among stray dogs and pet dogs^{3,10}.

The use of an enrichment medium enhanced the isolation rate in 20.8%. Using enrichment procedures in human faecal samples, SKIRROW & BENJAMIN¹⁴ and RIBEIRO, GRAY & PRICE⁸ obtained an increase of positive cases of 5.6 and 29.3% respectively. The use of enrichment culture seems to be necessary in samples in which the anticipated number of campylobacter organisms is low⁶. This statement and the results obtained in our work make the use of enrichment procedures desirable for the isolation of *Campylobacter* in epidemiological studies.

C. jejuni in naturally infected human faeces held at 25°C did not survive for more than 7 days¹. Under experimental conditions *C. jejuni* resists desiccation for periods that varies between 2 and 10 h⁵. The survival of *C. jejuni* in faeces naturally exposed to environmental conditions is an epidemiological factor that needs further clarification.

Since direct contact of humans with dog faeces deposited in streets and other public places is remote, they may constitute a most important source for the transfer of these organisms to sparrows -40% of them are intestinal carriers of *Campylobacter* (4)-and other

birds, increasing the dissemination possibilities of zoonotic thermophilic campylobacters.

RESUMO

Ocorrência de *Campylobacter jejuni* em fezes caninas recolhidas das ruas de uma cidade do sul do Chile.

Amostras de fezes caninas recolhidas das ruas de uma cidade do sul do Chile foram semeadas em meios seletivos para as espécies termófilas de *Campylobacter*.

Campylobacter jejuni (biotipo 1) foi isolado de 53 (35.3%) das 150 amostras estudadas. O emprego de um meio de enriquecimento aumentou em 20,8% a frequência de isolamento desta bactéria.

REFERENCES

1. BLASER, M. J.; HARDESTY, H. L.; POWERS, B. & WANG, W. L. L. — Survival of *Campylobacter fetus* subsp. *jejuni* in biological milieus. *J. clin. Microbiol.*, 11: 309-313, 1980.
2. BLASER, M. J. & RELLER, L. B. — *Campylobacter* enteritis. *New Engl. J. Med.*, 305: 1444-1452, 1981.
3. BRUCE, D.; ZOCHOWSKI, W. & FLEMING, G. A. — *Campylobacter* infections in cats and dogs. *Vet. Rec.*, 107: 200-201, 1980.
4. FERNANDEZ, H. — Species and biotype distribution of thermophilic campylobacters in animal reservoirs in Southern Chile. Third International Workshop on *Campylobacter* infections. Ottawa, Canada, 1985. Code n.º 115.
5. FERNANDEZ, H. — Desiccation resistance in thermotolerant *Campylobacter* species. *Infection*, 13: 197, 1985.
6. HUNTCHINSON, D. N. & BOLTON, F. J. — Is enrichment culture necessary for the isolation of *Campylobacter jejuni* from faeces? *J. clin. Path.*, 35: 1350-1352, 1983.
7. PRESCOTT, J. F. & MUNROE, D. L. — *Campylobacter jejuni* enteritis in man and domestic animals. *J. Amer. vet. med. Ass.*, 181: 1524-1530, 1982.
8. RIBEIRO, C. D.; GRAY, S. J. & PRICE, T. H. — Is enrichment culture necessary for the isolation of *Campylobacter jejuni* from faeces? *J. clin. Path.*, 37: 479, 1984.
9. RICHARDSON, N. J. & KOORNHOF, H. J. — *Campylobacter* infections in Soweto. *S. Afr. med. J.*, 55: 73-74, 1979.
10. SIMPSON, J. W.; BURNIE, A. G.; FERGUSON, S. & TELFER BRUNTON, W. A. — Isolation of thermophilic

- campylobacters from two populations of dogs. *Vet. Res. Commun.*, 5: 63-66, 1981.
11. SKIRROW, M. B. — *Campylobacter enteritis*: a "new" disease. *Brit. med. J.*, 2: 9-11, 1977.
12. SKIRROW, M. B. — *Campylobacter enteritis* in dogs and cats: a "new" zoonosis. *Vet. Res. Commun.*, 5: 13-19, 1981.
13. SKIRROW, M. B. & BENJAMIN, J. — Differentiation of enteropathogenic campylobacter. *J. clin. Path.*, 33: 1122, 1980.
14. SKIRROW, M. B. & BENJAMIN, J. — Is enrichment culture necessary for the isolation of *Campylobacter jejuni* from faeces? *J. clin. Path.*, 37: 478, 1984.
15. WRIGHT, E. P. — The occurrence of *Campylobacter jejuni* in dog faeces from a public park. *J. Hyg.*, 89: 191-194, 1982.

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