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CAMPYLOBACTER JEJUNI ASSOCIATED WITH DIARRHOEA OF PET ANIMALS AND INFANTS

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INTRODUCTION

Campylobacter jejuni is now recorgnized as an important enteric pathogen in animals and humans. C. jejuni was recognized as a cause of diarrhoea in dogs, since the out-break of C. jejuni enteritis in humans has been associated with diarrhoeic puppies (Blaser et al., 1979). Stray dogs and cats are widely distributed in Egypt probably due to its geographical location which is surrounded by open desert. The contamination of human food with the secretions and excretions of dogs harbouring pathogenic agents might also contribute to human infection (Siam et al., 1977).

Thus this work is initiated to increase our knowledge on the role of dogs and cats-harbouring with C. jejuni as a focus of infection in infantile diarrhoea in Egypt.

MATERIAL AND METHODS

1. Material:

Sample:

A total of 400 faecal samples obtained from dogs, cats and infants were examined for campylobacter organisms.

130 faecal samples were obtained from dogs (80 from apparently healthy and 50 from diarrhoeic cases) and 70 faecal samples from cats (20 from apparently healthy and 50 diarrhoeic cases), in addition to 200 infant faecal samples (26 were from apparently healthy and 174 diarrhoeic cases).

The samples were collected throughout the year 1990 in the Cairo and Giza governorates.

Media: Camp BAP media (oxoid).
Brucella broth media (oxoid).
Thiol medium (oxid).
Thioglycollate medium (oxid).

2. Methods

2.1 Bacterial examination:

All samples from children, cats and dogs were collected with swabs, which were kept in sterile Macarteny bottles containing the transport medium Brucella broth. The collected samples were inoculated on campy-BAP medium or thioglycollate medium and incubated for 72 hours at 42°C in a microaerophilic condition. They were then sub-cultured into thiol broth at 42°C for 48 hours. Suspected isolates were identified morphologically, culturally and biochemically according to Krieg and Holt (1984).

2.2 Serological examination:

The double diffusion precipitin analyses technique of Nageswararae and Blobel (1963) was applied. Three C. jejuni isolates from infant, dog and cat origin, were inoculated into brucella broth for preparation of lysed cell extracts according to Walsh and White(1986).

RESULTS AND DISCUSSION

The results in Table (1) show that 8 C. jejuni strains were isolated from 50 diarrhoeic dog faecal samples with an incidence of (16%), this nearly coincides with the results reported by Gondrosen et al., (1985) and Romagnoli et al., (1986) who isolated C. jejuni in a percentage of 12.8% - 22.4% of dogs with diarrhoea and dysentry. On the other hand, a lower percentage of C. jejuni was reported by Holt, (1980) and Svedhem and Kayser (1981) who isolated C. jejuni from 4 (8%) and 11 (5%) dogs showing diarrhoea. In addition Table (1) also reveals that C. jejuni was isolated from 22.73% of the diarrhoeic puppies and 10.71% from diarrhoeic dogs. In this respect Boscat et al., (1984) recovered one isolate out of 7 (14.28%) from affected puppies, while Elias et al., (1984) isolated 4(7.14%) out of 56 diarrhoeic puppies.

It is noted that 10% of the diarrhoeic cats were a source of C. jejuni. These results agree to a great extent with Treschnak et al., (1987) who succeeded to isolated C. jejuni from 12.1% diarrhoeic cats. The obtained results have a lower percentage than those obtained by Winkenverder (1966), who isolated campylobacter organisms from 25% of the cats with symptoms varying from mild to severe enteritis; and Bruce et al., (1988) who isolated C. jejuni from 45% of the diarrhoeic cats. With regard to the kittens, it is tabulated (Table 1) that 21.1% of the kittens and 3.23% of he cats were infected with C. jejuni. It was noticed here that, the highest percentage of isolation was from the kittens than from cats. These results simulate that obtained by Martin et al., (1983) who reported that the isolation rate varied from 2% to 45% according to age and clinical symptoms. However, Pellerin et al., (1984) isolated C. jejuni from one out of 10.0 cats less than 12 months old. Healthy animals failed to reveal the presence of any evidence of C. jejuni as indicated in Table (1). This finding is in complete agreement with the suggestion of

Table (1): Rate of isolation of C. jejuni from the faeces of diarrhoeic dogs, cats and infants.

	Diarrhoeic cases	Isolates	%	Normal	Isolates	%
Puppies	22	5	22.73	21	-	0
Dogs	28	3	10.71	59	-	0
Total	50	8	16 %	80	-	0
Kitten	19	4	21.1	4	-	0
Cats	31	1	3.23	16	-	0
Total	50	5	10 %	20	-	0
Infants up to 2 years	107	7	6.5	16	-	0
Infants more than 2 years	67	-	0.0	7	-	0
Total	174	7	6.5 %	23	0	0

Prescott and Bruin-Mosch (1981), Seifert and Weber (1983), and Sihvonen and Hedlund, (1987) who were unable to isolate any camylobacter strains from apparently healthy dogs and cats. On the other hand Pellerin et al., (1984) succeeded to isolate C. jejuni from 17.64% of non enteric cats and Nair et al., (1985) recovered C. jejuni from 1 (3.1%) apparently healthy dog.

C. jejuni could be isolated from diarrhoeic infants both in Giza and Cairo governorates. However the positive cases were very few so that it would be unwise to draw conclusion about the incidence. The apparently healthy persons examined in both governorates were all negative. Although the study was extended all over the year with the intention to reveal any seasonal variation in the incidence of C. jejuni in diarrhoeic cases, however, the number of cases was too small to speak about seasonal variation. It may be worthy to mention that no positive cases were seen in winter. In summar there were 4 cases in contrast to 2 cases in spring and one cases in autumn.

The results recorded in Table (1) indicates that, C. jejuni could not be isolated from children more than 2 years in old. However 7 C. jejuni isolates (6.5%) were recovered from diarrhoeic infants up to 2 years. These observation were confirmed, Wheeler and Borchers (1961), Goossen et al., (1986) and Salfied and Pugh (1987) who isolated C. jejuni from patients with diarrhoea from 7 weeks to 1 year old.

An attempt was also made here in this work to discrete the serological relationship between different C. jejuni isolates by conducting agar gel preciptitation test. This showed that there is a preciptitation line between the standard antiserum of C. jejuni isolated from cattle and the prepared antigens of the isolated C. jejuni from dogs, cats and infants. This may lead to the assumption that the isolated C. jejuni from dogs, cats and infants are correlated serologically.

culture or in combination with other aerobic or anaerobic organisms in an incidence varied from 67% up to 90% (Simon and Stovell, 1971; Kanoe et al., 1978 and Garcia et al., 1986).

The significance of some clostridial organisms in the livers of sheep at post-mortem is undertaken to investigate by some authors and many of the sheep had liver fluke infection (Butozan et al., 1961; Thomson et al., 1968, and Scanlan and Berg, 1983). Isolation of anaerobic bacteria other than F. necrophorum from sheep hepatic abscesses have occurred rarley (Moore et al., 1969 and Kanoe et al., 1978).

Some investigators also have reported that other aerobic and facultative anaerobic organisms often are present in sheep hepatic abscesses including staphylococcus spp, Streptococcus spp., Pseudomonas, Corynebacterium spp, and members of family Enterobacteriaceae (Kanoe et al., 1976; Szazados and Tokaco, 1978 and Berg and Scanlan, 1982).

The objectives of this study were to determine the aerobic and anaerobic bacteria causing sheep liver abscesses and to characterize selected predominant isolates by antibiotic susceptibility tests and pathogenicity for laboratory animals.

MATERIALS AND METHODS

The material used in this work had been obtained from 92 carcasses of sheep. These consectively slaughtered animals were presented from different abattoirs within a period from July 1989 up to November, 1990. Seventy two sheep liver abscesses were collected, out of these, 32 revealed liver flukes. The abscessed portions removed for study were surrounded by two or three inches of apparently tissues. Twenty livers not showing abscess formation were included as control.

Table (1) : Results of bacterial examination of 72 abscessed sheep liver.

Bacterial isolates	Abscessed Liver (72)					
	With Liver flukes (32)		without Liver flukes (40)		Total	
	No.	%	No.	%	No.	%
I-As Single infection						
F.necrophorum	14	43.8	19	47.5	33	45.8
Cl. pyogenes	6	18.7	4	10.0	10	13.8
Staph.aureus	5	15.6	4	10.0	9	12.5
Ps.aeruginosa	1	3.1	2	5.0	3	4.2
Bacteroides fragilis	3	9.4	0	-	3	4.2
Peptostreptococcus anaerobius	0	0	2	5.0	2	2.8
II As Mixed infection:						
F.necrophorum + C.perfringens	2	6.3	5	12.5	7	9.7
F.necrophorum + E.coli	0	0	3	7.5	3	4.2
F. necrophorum + Str.pyogenes.	1	3.1	1	2.5	2	2.8
	32	100.0	40	100.0	72	100.0

Table (2): Results of culture of 20 normal livers showing types and distribution of organisms.

Type of organisms .	Distribution of organisms on the basis of single livers.	
	No.	%
Sterile	7	35.0
Staph. saprophyticus	4	20.0
Str. faecium	3	15.0
Pr. vulgaris	2	10.0
Serratia marcesoens	2	10.0
Citrobacter diversus	1	5.0
E. coli	1	5.0
Total	20	100.0

Thus it is suggested that campylobacter organisms could be transmitted from infected kittens, cats puppies and dogs to man and induce infection . This has been suggested since 1980 by Bruce et al., and Holt, who reported that, the source of infection was infected dogs.

SUMMARY

No camylobacter organisms could be detected from apparently healthy dogs, cats or infants. On the other hand, the recovery of C. jejuni from diarrhoeic dogs (16%) was considerably higher than diarrhoeic cats (10%) and infants (4.02%). All isolates grew at 37°C and 42°C but not 25°C, consequently, the isolates were identified as C. jejuni.

It was noticed that the high percentage of isolation and incidence were in the young ages. It seems that, there is a serorelationship between all isolates by using the agar gel precipitation tests.

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