Incidence of Campylobacter in diarrhoeal cases and in control population

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Abstract
Sixty patients with acute diarrhoea and fifty asymptomatic healthy individuals were studied for the incidence of Campylobacter in their stool specimens, which were transported in Stuart's transport medium. Of the 60 patients, Campylobacter could be isolated in eight cases (13.4 percent). Six of these isolates were identified as Campylobacter fetus ss jejuni, while the other two strains were identified as Campylobacter fetus ss intestinalis. In all the eight positive cases, bloody diarrhoea was observed. Campylobacter was not isolated in any of the 50 control subjects studied, suggesting that the organism is probably not endemic to Bombay.

Key words: Campylobacter, diarrhoea.

Introduction
In the last few years, Campylobacter fetus (previously known as Vibrio fetus) has emerged as an important cause of acute diarrhoeal disease in man. Although the organism has been recognised for long to be a common inhabitant of domestic animals, it has been increasingly implicated over the past 30 years in causing disease in humans. During this period, workers have reported its isolation from 5-14% of patients with diarrhoea and from less than 1% of asymptomatic persons. From India, the reports have furnished an incidence of 7-16% among diarrhoeal patients. The present study was undertaken to establish the frequency of Campylobacter fetus in diarrhoeal cases and in the control population at the Sir J J Group of Hospitals, Bombay.

Material and Methods
Patients included received no prior antibiotic administration. Stool specimens were collected from them in Stuart’s transport medium at sigmoidoscopy and sent to the laboratory in an ice-pail. The specimens were streaked onto a selective medium (Skirrow’s) for Campylobacter. The medium contained vancomycin 10 μg/ml, polymyxin B 2.5 IU/ml and trimethoprim 5 μg/ml. These plates were incubated in anaerobic jars enclosing an atmosphere of 85% nitrogen, 10% carbon dioxide and 5% oxygen. The specimens were studied for aerobic organisms also by plating them onto blood agar and MacConkey agar plates. At the end of 72 hours, inoculated Skirrow’s plates were observed for evidence of growth. Campylobacter were identified by their small, grey, non-haemolytic colonies. Gram stain and basic fuchsin stained smears were examined for the characteristics S or C shaped forms. Further identification was done as per standard procedures.

Results
The incidence of Campylobacter was found to be 13.4 percent (8/60) in diarrhoeal cases and nil in the control population studied. These eight cases included five males and three females, with age ranging from 1-40 years. Sigmoidoscopic examination in them showed patchy areas of erythema and superficial ulcerations. The other organisms isolated include Escherichia coli in 35 patients with diarrhoea and 50 controls, and Shigella, Klebsiella and Proteus in 3, 5 and 3 cases with diarrhoea respectively. One case with diarrhoea had Salmonella species.

Of the eight culture positive cases, Campylobacter fetus ss jejuni was isolated six times, thrice along with Escherichia coli as the sole aerobic pathogen. In the remaining three cases, it was isolated along with Shigella species and Escherichia coli twice and once along with Klebsiella and Shigella flexneri. There were two isolates of Campylobacter fetus ss intestinalis, one of which was isolated along with Escherichia coli as the sole aerobic pathogen while the other strain was isolated along with Escherichia coli and Shigella shiga as the sole aerobic isolates. In three cases, Campylobacter like forms were seen on basic fuchsin smears of the stool specimen but the organism could not be grown on culture. In one of these cases, Salmonella typhi was the aerobic organism isolated.

A common feature observed was the acidic reaction of the stool specimens in Campylobacter positive cases. In addition, it was observed that 26 of the 60 patients had associated bloody diarrhoea, and microscopic examination of the stool showed abundance of polymorphonuclear leucocytes.

Discussion
The pathogenesis and mode of transmission of human campylobacteriosis is poorly understood. Although the infection is a recognised zoonosis, there is no evidence that exposure to Campylobacter fetus in its natural habitat, i.e. the intestinal tract of domestic animals, immediately precedes human campylobacteriosis. Campylobacter enteritis is widely distributed in the tropical and temperate areas of the world. However, the incidence of the organism in both diarrhoeal cases as well as control population has varied.
The incidence rates of Campylobacter in our study of diarrhoeal cases are comparable to those reported earlier. The incidence rates vary marginally ranging from 5-16% in Indian reports. In all these reports, the stool samples were collected from the voided stool specimen. To eliminate the possibility of contamination, in the present study every stool specimen was obtained directly from the rectum during sigmoidoscopic examination.

In the healthy population, the incidence varies from 0-1.7% The higher incidence (4-4%) reported by Nair et al followed an epidemic of diarrhoea in 1984, which could possibly leave behind carriers. The incidence rate in a previous study from Bombay was also reported as nil, thus suggesting that Campylobacter is probably not endemic to Bombay.

The results from the present study indicate that Campylobacter fetus is an important pathogen shown to be associated with diarrhoeal illness and is an important addition to the growing list of enteric pathogens.

References