Infantile Diarrhea: With Special Reference to *E. coli*

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*E. coli* strains cause diarrhea in infants. This study was done to determine the different strain of *E. coli* causing infantile diarrhea. A total of 94 infantile diarrhea stool samples were collected for microbiological (bacteriological) analysis. *E. coli* strains of 20 types were isolated from diarrheal stool samples in pure and mixed form (62.92%, 28.07%) respectively by API kits. This study showed that pure *E. coli* was found to cause diarrhea and also it was associated with other bacteria like *Staphylococcus spp.*, *Streptococcus spp.*, *Clostridium spp.*, *Klebsiella spp.* and *Pasterella spp.*. Amikacin, Colistin, Nitrofurantoin (60% each) were found to be drug of choice.

**Key words:** Infantile diarrhea, *E. coli*, Orissa.

Acute infectious enteritis is major cause of morbidity throughout the world. The disease is often mild and self-limiting in healthy adults, but in the malnourished aged and young children different strains of *Sigel*, *Salmonella*, *E. coli*, *Klebsiella and Vibrio* are mostly responsible for bacterial diarrhea. In particular, the role of *E. coli* as a major cause of diarrhea in all age groups has been established. Way back in 1885, Escherichia is the first person who isolated this gram negative coco-bacillary organism from the stool of infants with enteritis. Bray (1945) found out that certain strains of *E. coli* produces diarrhea in children.

**MATERIAL AND METHODS**

A total of 94 stools / rectal swabs were collected from cases of infantile diarrhea attending Capital hospital, Bhubaneswar. Patients within 3 years of age groups were included in this study. Rectal swab/stool specimens were collected before starting any antibiotic therapy to the patients. Samples were transported to the microbiological laboratory in Carry-Blair medium, without delay in freezing condition. Detailed clinical history regarding the present and past illness and treatment received prior to hospitalization was recorded in each case. Routine, gross macroscopic examination of the stool was done in all cases. Within two hours from the collection, swabs were streaked on 5 to 10% sheep blood agar plates without delay. After 24 hours or incubation, isolated colonies were inoculated to Mac-Conkey agar plates. Next day lactose and non-lactose fermenting colonies were noted and were identified by API-E kit, Biomerieux, France. For antibiogram following antibiotic discs were used, amikacin (30mcg),...
Colistin (10mcg), nitrofurantoin (100mcg), Norfloxacin (100mcg), Metronidazole (100 mcg). Mueller Hinton agar was used by standard disc diffusion method (Kirby & Bauer 1966).

RESULTS

Twenty E. coli strains of different API profile coding was identified by API-E kit. Out of 94 cases investigated, 56 (62.92%) cases constituted pure form of E. coli and 25 (28.07%) cases of mixed type. Out of 25 cases, three cases were found to be infected by E. coli and Streptococcus spp., eight cases were by E. coli and Staphylococcus spp., out of 94 cases investigated, 56 (62.32%) cases constituted pure form of E. coli 25 (28.07%) cases of mixed type. Again three cases were by E. coli, and Clostridium spp., three cases were by E. coli and pasterulla spp. Maximum strains were found in the age group between 7-12 months. Antibiogram pattern of the E. coli strain were shown in table – 1. E. coli strains were found to be sensitive to amikacin, colistin, nitrofurantoin (60 percent each) All strains were found to be resistance to metronidazole, Norfloxacin and ciprofloxacin were found to be resistance 95 percent and 98 percent cases respectively. Chloramphenicol was

DISCUSSION

E. coli as the commonest organism responsible for infantile diarrhea has been reported by workers Naruka et al. (1976), Rao el al. (1965), Sengupta el al. (1967), Yella el al. (1976, Escherich (1885). In the present investigation isolation rate was found to be 62.2 percent. This result was quite comparable with the study of Gupta et al. (1962) from Jaipur who have reported 70.3 percent. From the antibiogram studies, E. coli strains were found to be 60 percent sensitive to amikacin, which is well comparable with the findings of Chandrasekharan et al. (1975), Behera et al. (1979), Sensitivity of E. coli to gentamicin was 25 percent in the present study where was Neeraj el al. (1998) noticed that all E. coli strains were sensitive to gentamicin, but Ohene (1997) noticed 78 percent strains were sensitive to gentamicin but Jain et al. (1991) have reported the resistant strains of E. coli towards gentamicin, chloramphenicol was

<table>
<thead>
<tr>
<th>Antibiotics</th>
<th>Disc Potency 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 R 1 S %M %S %R</th>
</tr>
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<tbody>
<tr>
<td>Amikacin</td>
<td>30 mcg S S S S I I I I I I I I I I I I I I I</td>
</tr>
<tr>
<td>Gentamicin</td>
<td>10 mcg R R R R R R R R R R R R R R R R R R R</td>
</tr>
<tr>
<td>Norfloxacin</td>
<td>100 mcg R R R R R R R R R R R R R R R R R R R</td>
</tr>
<tr>
<td>Metronidazole</td>
<td>100 mcg R R R R R R R R R R R R R R R R R R R</td>
</tr>
<tr>
<td>Chloramphenicol</td>
<td>100 mcg R R R R R R R R R R R R R R R R R R R</td>
</tr>
<tr>
<td>Ciprofloxacin</td>
<td>10 mcg R R R R R R R R R R R R R R R R R R R</td>
</tr>
<tr>
<td>Nitrofurantoin</td>
<td>100 mcg R R R R R R R R R R R R R R R R R R R</td>
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</tbody>
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Table 1.

found to be sensitive to 30 percent E. coli strains. According to Malkawi et al. (1998), due to the presence of 25.0 kb plasmid in some strains, E. coli proved to be resistant to chloramphenicol. It was observed that percentage of sensitive to ciprofloxacin was 5 percent whereas Hoge et al. (1998) showed 1 percent strains of ETEC. The recent isolated strains were found to be 60% sensitive to colistin which is in agreement with principle of Newton (1956). According to him the antibacterial activity of colistin is directed solely against aerobic gram-negative rods. In case of nitrofurantoin, it was found that the percentage of sensitivity was 60 percent which corroborates with the finding of Brumfitt and Percival (1967).

REFERENCES