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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 Pasterulla 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 cocco-bacillary organism from the stool of infants with enteritis. Bray (1945) found out that certain strains of *E.coli* produces diarrhea in children.

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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, Biomeriux, 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 1.

Antibiotics	Disc Potency	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	R	I	S	%I	%S	%R
Amikacin	30 mcg	S	S	S	S	S	I	I	R	S	R	I	S	R	S	S	I	S	S	I	S	14	15-16	17	25	60	65
Gentamicin	10 mcg	R	R	S	S	S	R	R	R	R	R	R	R	R	I	R	S	R	R	R	I	12	13-14	15	10	25	65
Norfloxacin	100 mcg	R	R	R	R	R	R	R	R	R	R	R	R	R	R	I	R	R	R	R	R	12	13-16	17	5	0	95
Metronidazole	100 mcg	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	-	-	-	0	0	0
Cholarmphenicol	30 mcg	R	R	R	S	S	R	R	R	S	R	S	S	R	I	S	R	R	R	R	R	12	13-17	18	5	30	65
Colistin	10 mcg	I	S	S	S	I	I	I	S	S	S	R	S	R	I	S	S	S	S	S	I	8	9-12	13	30	60	10
Ciprofloxacin	5 mcg	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	15	16-29	35	0	5	95
Nitrofurantoin	100 mcg	I	S	S	R	S	S	R	S	S	R	S	R	S	S	S	I	I	S	S	R	14	15-16	17	15	60	25

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 resistance to chloramphenicol. It was observed that percentage of sensitive to ciprofloxacin was 5 percent where as 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 out that the percentage of sensitively was 60 percent which corroborates with the finding of Brumfitt and Percival (1967).

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