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ORIGINAL ARTICLE

A Study On Isolation Of E.coli Bacteria From Different Human Clinical Specimens In A Raipur

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Abstract:

To fulfill the aim of these studies a large range of clinical samples were screened for identification of E.coli, their antibiotic sensitivity profile was evaluated. There are 500 specimen collected from pus, urine, stool, blood and miscellaneous examined on hospitalized and Out Patient Department of Pt. J.L.N.M.M. College, Raipur. 161(32.2%) pure cultures of E.coli colonies were isolated. Number of patients are varies in each sample. It's observed that UTI is most frequently caused by E.coli followed by pus, miscellaneous, stool and blood. Total number of patients in urine sample 26 male 29 female, in pus sample 30 male 5 female, in miscellaneous sample number of patient observed 14 male 11 female, 9 male and 5 female patients from blood culture and at last from stool sample 19 male 13 female were obtained. The work was focused on proper management of bacterial infection and uses the effective antimicrobial agent against disease.

KEYWORD:

Isolation, Identification, E.coli, Bacteria, Clinical specimen, Antibiotic sensitivity.

1. INTRODUCTION

Different disease causing microorganism (pathogens or germs) that enter in body become established, multiply and produce symptoms. Bacteria and viruses cause most diseases, but diseases are also caused by other microorganism, protozoans and other parasites (Anathanarayan, et. al., 2006). E. coli is the leading etiologic agent of urinary tract infections, Pyogenic infection, other miscellaneous, encompassing a highly heterogeneous group of strains (Khalili et al., 2012). E. coli strains that cause disease outside the intestine are known as extra intestinal pathogenic E. coli of humans that's why in urine and stool consist these stains (Johnson et al., 2012). This study was carried out at the Pt. J.L.N.M.M. College and Dr. B.R.A.M. hospital, Raipur (C.G.) India. To determine the involvement of E.coli species as one of the major causative organisms in infections and observed clinical features, distribution of pathogens in different part of body.

2. MATERIAL AND METHOD

2.1. Sample collection: Samples were collected using sterile cotton swabs, small screw capped bottle, a firmly stopper tube or syringe or a sealed capillary tube it must be bearing the patients name, age and sex (Koneman et. al., 2005).
2.2. Initial examination: The appearance of a specimen like color, smell and prepare direct smear in slide was observed (Koneman et. al., 2005).
2.3. Characterization of Bacterial Isolates: The specimen was inoculated on MacConkey Agar, Eosin

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Methylene Blue Agar and Nutrient Agar. Streaked plates and incubated at 37ºC for 24 hrs respectively. Bacterial colonies on plates were later Gram stained (Nasreen et al., 2009). Characterization of bacterial isolates was based on standard microbiological methods. Identification of isolates were done based on colony morphology, motility, catalase test, oxidase test, coagulase test and biochemical tests like Tripal sugar iron agar, Hydrogen sulfide test, Carbohydrate fermentation test, Phenylalanine deaminase test, Methyl red test, Nitrate reduction test, Urease test, Voges proskauer, Citrate utilization test, Indole test (Koneman et. al., 2005).

3. RESULT AND DISCUSSION

There was a distribution of E.coli species isolated from various clinical infections. A total of 161 (32.5%) E.coli species were isolated. Total 100 samples of each infection were observed (Tables 1). In 100 sample both male and female was affected according to different age group data was tabulated in table no 3. Apart from the various E.coli species, other bacteria species were also isolated and their frequency of occurrence was demonstrated. For identification of E.coli selective media and biochemical reaction was performed result was shown in Table no 2. Staphylococcus aureus was the frequently isolated organism 168 (30%); others were Pseudomonas species 23.6%, Klebsialla species 37 (6.61%), Streptococcus species 5(0.8%) and Proteus species 2 (0.36%). E.coli species had the highest frequency of occurrence among the gram negative bacteria isolated. This study showed the frequency occurrence of the various E.coli species observed in all clinical infections. E. coli was observed as the most frequently isolated in keeping with the observations of Rajalakshmi et al., 2012. This is similar to reported by Nasreen et al., 2009; Kalsoom et al., 2012. Urinary tract infection (UTI) is a serious health problem and it has been estimated that about six million patients visit outpatient departments and about 300,000 are treated in the wards every year for UTI worldwide (Akortha and Ibadin, 2008). E. coli are the most common cause of urinary tract infections (UTIs) in women and because of its high incidence (Manges et al., 2008). The present results support the previous findings indicating that E. coli is the principal etiological agent of UTI, accounting for 46.98% of the screened cases (Jha and Bapat, 2005; Ronald, 1999). E. coli remained dominant causing 80% of UTI followed by Streptococcus or Staphylococcus and Proteus species showing close resemblance to our findings (Lau et al., 2004). In another study, it was repotted; E. coli existed followed by Klebsiella species (Olafsson et al., 2000). Similarly it has also been reported that E. coli followed by S. saprophyticus was the most common uropathogen in females. It should be remembered that every healthy person is capable of infecting himself and other people as E.coli species are ubiquitous in the environment; therefore good personal and environmental hygiene are necessary. There is need to maintain proper hygiene standards within hospital surroundings to reduce the incidence of infections. Future studies on E.coli species should be encouraged because some more new distribution and susceptibility to antimicrobial agents may be discovered. There is need for Government, NGO and Hospitals to encourage an annual review of the microbial flora of their environment and the antibiotic sensitivity pattern.

TABLE NO 1:
Distribution of E.coli from various clinical specimens.

S.no.	Specimen's	Positive sample in 100 patient's
1.	Urine	55
2.	Pus/wound	35
3.	Blood	14
4.	Stool	32
5.	Miscellaneous	25

TABLE NO 2:
Biochemical test for identification of E.coli

S.No.	Biochemical Test	Observation
1.	Gas from glucose	+
2.	Acid from glucose	+
3.	Acid from sucrose	A±
4.	H_2S production	-
5.	NO_3 production	+
6.	Indole production	+
7.	MR reaction	+
8.	VP reaction	-
9.	Citrate	-
10.	Urease	-
11.	Catalase	+

TABLE NO 3:
Number of patient in different Age group, Specimen and Male Female

S.No.	Age group	Specimen UC		Specimen PC		Specimen BC		Specimen MC		Specimen SC	
		M	F	M	F	M	F	M	F	M	F
1	0-10	5	1	2	1	3	4	0	1	1	2
2	10-20	4	4	1	1	0	0	2	0	2	1
3	20-30	3	7	5	0	2	1	3	5	2	4
4	30-40	3	9	6	1	0	0	3	2	6	3
5	40-50	1	2	6	2	2	0	6	2	2	2
6	50-60	2	5	5	0	1	0	0	1	1	1
7	60-70	5	1	3	0	0	0	0	0	4	0
8	70-80	3	0	2	0	1	0	0	0	1	0
Total		55		35		14		25		32	

4. CONCLUSION

The appropriate treatment for infection has been a subject of recent research. After statistical analysis it was concluded that the incidence of disease is higher in males than females. The study found that E. coli are the more common isolates in female subjects and in case of male patients E. coli also is principal etiological agent of UTI but also in Pus, Stool sample. After Identification of the causative organisms, its susceptibility to antibiotic is essential, so that proper drug is chosen to treat the patient in early stages in each sample.

5. ACKNOWLEDGMENT

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