PREVALENCE OF ENTEROCOCCI AND THEIR AST PATTERN FROM VARIOUS CLINICAL SAMPLES

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Abstract- Enterococcus bacteria belongs to the gram positive group of bacteria. They are one of the group D streptococci. This study was conducted in Saaii College of Medical Science and Technology, Kanpur in 2017. The aim of the study was to find out the prevalence of Enterococci in Kanpur and to identify the drug of choice. A total of 500 samples were taken out of which enterococcus were found in 100 samples and the prevalence was 20%. In antibiotic susceptibility testing several antibiotics such as co-trimoxazole, chloramphenical, norfloxacin, fosfomycin, erythromycin, gentamycin, nitrofurantoin and vancomycin were used, in which co-trimoxazole, chloramphenical, nitrofurantoin and gentamycin shows 50%, 45%, 45%, and 40% sensitivity respectively. Norfloxacin shows 15% sensitivity whereas fosfomycin and erythromycin shows 10% sensitivity. Vancomycin shows 0% resistance and 100% samples of enterococcus were susceptible to it. Most of the enterococcus species in clinical samples were isolated as nosocomial pathogens. This study have shown an increase in the infection and antibiotic resistance in enterococcus species. Drug of choice for enterococci in Kanpur was Vancomycin at that time.

Keywords- *Enterococcus bacteria*[1],

Introduction- The genus Enterococci are gram positive, ovoid shaped cocci, arranged in short chain or in pairs. They have many different species, among them some common species are E. faecalis, E. faecium and E.durans. They belongs to group D streptococci. Enterococci have various unique characteristics which differentiate them with other streptococci. They can grow in the presence of 40% bile, 6.5% sodium chloride, at pH 9.6, at 45 degree Celsius temperature, and in 0.1% methylene blue. They produce tiny deep pink colonies when grown on MacConkey medium which indicates they have ability to ferment the lactose. They can survive at 60 degree Celsius for 30 minutes indicating they are relatively heat resistant. Usually they show non hemolytic colonies on blood agar, however, some strains may show alpha or beta hemolysis. Identification of the Enterococcus species is made on biochemical grounds. E.faecalis is the Enterococcus most often isolated from human sources. It can be identified by its ability to ferment mannitol, sucrose, sorbitol, and esculin, and to grow on tellurite blood agar producing black colonies. The word "Prevalence" means "the percentage of a population that is affected with a particular disease at a given time." Enterococcus species has recently become the major nosocomial pathogen exhibiting resistance to many anti-microbials. Enterococcus have ability to cause serious infections like endocarditis, bacteriamia, urinary tract infection, infection of the biliary tract, septicemia and intra abdominal abscess complicating diverticulitis and peritonitis. Serious Enterococcal infections are often refractory to treatment with a high mortality rate. This indicates the necessity for their identification from various clinical specimens and to determine the accurate antimicrobial resistance pattern for Enterococci, so that effective therapy and infection control measure can be given to the patients.

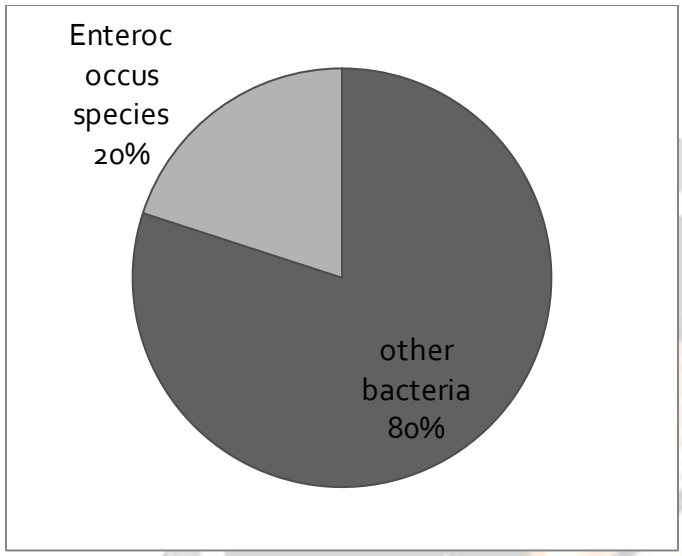
Materials and methods- This project was done in the department of Microbiology, Saaii College of Medical Science and technology, Kanpur from October 2017 to January 2018. The samples included urine, blood, pus were collected from GSVM Medical College from the patients of UTI, septicemia, pyogenic infections, etc. The total sample size was 500 and enterococcus species were identified by gram staining and by using standard tests such as catalase test, bile esculin test, and 6.5% NaCl test. First of all, the samples were inoculated in culture media (blood agar, MacConkey agar or CLED agar) and then, incubate in incubator for 24 hours. After that, gram staining were performed. Then, catalase test were performed for the samples which gave gram positive result. After this, bile esculin test were performed for the samples which gave gram positive and catalase negative. Enterococcus species shows bile esculin test positive. After this, we performed 6.5% NaCl test for those samples which gives gram

positive, catalase negative, and bile esculin positive for the confirmation of enterococcus species. After the identification of the bacteria we performed antibiotic susceptibility test by Kirby and Bauer's disc diffusion method.

RESULTS Out of 500 samples, enterococcus were found in 100 samples.

So, the prevalence of enterococci is-

100/500*100 = 20%



Result of antibiotic susceptibility test is described in the table given below:-

NAME O THE ANTIBIOTICS	Resistant%	Intermediate %	Sensitive %
Co-trimoxazole (cot)	25%	25%	50%
Norfloxacin (NX)	85%	0%	15%
Fosfomycin (F)	90%	0%	10%
Erythromycin (E)	90%	0%	10%
Chloramphenicol (C)	45%	10%	45%
Gentamycin (GEN)	60%	0%	40%
Nitrofurantoin (NIT)	45%	10%	45%
Vancomycin (VA)	0%	0%	100%

DISCUSSION A total of 500 samples were taken out of which enterococcus were found in 100 samples and the prevalence was 20%. In antibiotic susceptibility testing several antibiotics such as co-trimoxazole, chloramphenical,

norfloxacin, fosfomycin, erythromycin, gentamycin, nitrofurantoin and vancomycin were used, in which co-trimoxazole, chloramphenical, nitrofurantoin and gentamycin shows 50%, 45%, 45%, and 40% sensitivity respectively. Norfloxacin shows 15% sensitivity whereas fosfomycin and erythromycin shows 10% sensitivity. Vancomycin shows 0% resistance and 100% samples of enterococcus were susceptible to it.

CONCLUSIONS This study has shown an increase in the infection and antibiotic resistance in enterococcus species. Drug of choice for enterococci in Kanpur was Vancomycin at that time.

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