"BACTERIOLOGICAL ANALYSIS OF BILE AND POST OPERATIVE OUTCOME IN CHOLECYSTECTOMY PATIENTS AT A TERTIARY CARE HOSPITAL IN KANPUR"

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ABSTRACT

INTRODUCTION:-Gallstone disease is one of the most common disease affecting the gastrointestinal tract. Biliary tract infection results from bile stasis due to chronic obstruction, mainly (80%) gallstones. Biliary obstruction increases ductal pressure, resulting in bacterial proliferation and dissemination. **AIM:-** To study the Bacteriological profile of bile and its antimicrobial susceptibility and post-operative outcomes in cholecystectomy patients. **MATERIAL & METHODS:-** This prospective study included patients admitted in surgery department with a diagnosis of symptomatic gallstone disease and subjected for laparoscopic or open cholecystectomy between 1st of Jan 2019 to 30th December 2019. The intraoperative bile of patients subjected for cholecystectomy were cultured aerobically according to standard protocol. And the Antibiotics susceptibility testing was performed according CLSI guidelines 2019. **RESULTS:-** Out of the total 100 patients, bile culture was Positive in 10 patients. *E.coli* was the predominant isolate (6%) followed by *S. lugdinensis (*2%), and *Acinetobacter spp* (2%). The most sensitive antibiotic was Gentamicin (100% sensitivity) followed by Ciprofloxacin (80% sensitive) both in GNB and gram positive isolates, Vancomycin and Linezolid were the most effective showing 100% sensitivity

CONCLUSION:- In this study *E.coli* was predominant bacteria causing recurrent cholecystitis. The common factor inducing infection was gall stone.

KEY WORDS:- Cholecystectomy, *E.coli*, bile.

INTRODUCTION:-

Cholecystectomy is currently a frequently performed operation. The most common reason for a cholecystectomy is gallbladder stones. However, the presence of gallstones within either the gallbladder or biliary tree is associated with the bacterial colonization of the bile. In patients without gallbladder stone disease, previous biliary intervention is associated with high rates of bacteriobilia [1]. The pathogenesis of gall stone is complex and it appears to be influenced by genes and environment and their interactions [2-5].

Among the important environmental factors in the pathogenesis of gall stones is the involvement of bile bacteria. Under conditions of normal bile flow, bacteria in the biliary system are of no clinical significance. Upon bile duct obstruction, bacteria proliferate within the stagnant bile while biliary pressure increases. Eventually, the bacteria presumably translocate into the circulation causing a systemic infection. Acute cholangitis spans a continuous clinical spectrum and can progress from a local biliary infection to advanced disease with sepsis and multiple organ dysfunction syndrome. Therefore, it is important to know the microbiological flora of the gallbladder before prophylactic antibiotics are given [6-9].

Prophylaxis would be appropriate according to bacteria isolated from the bile and could prevent postoperative infections. In the UK, USA, and Australia, the prevalence rates vary from 15 to 25%. In India, it is more common in North India than in South India. Similarly, the incidence in Eastern India is higher than in the west [10-12]. Incidence of gallstone increases with age. It is more common in females than male (M:F = 1:4). About 50% of patients with gallstones are asymptomatic. 1–2% of asymptomatic patients will develop symptoms requiring cholecystectomy per year, making cholecystectomy one of the most common operations performed by surgeons [13, 14]. Prophylaxis would be appropriate according to bacteria isolated from the bile and could prevent postoperative infections To justify antibiotic prophylaxis against biliary organisms, it requires to be shown that the bile is colonized with bacteria[15].

MATERIAL AND METHODS:-

This prospective study included patients admitted in surgery department with a diagnosis of symptomatic gallstone disease and subjected for laparoscopic or open cholecystectomy between 1st of Jan 2019 to 30th December 2019 in Rama Hospital and Research Centre Mandhana Kanpur. The intraoperative bile of patients subjected for cholecystectomy were cultured aerobically according to standard protocol. And the Antibiotics susceptibility testing was performed according CLSI guidelines 2019. Inclusion criteria were patients undergoing cholecystectomy and patient giving informed consent for study. Patients' age less than 18 year, immune-compromised patients with any known source of sepsis, patients with history of ascending cholangitis, patients with preoperative diagnosis of empyema of gallbladder, patients who had undergone endoscopic retrograde cholangio pancreaticography (ERCP) and endoscopic sphincterotomy within one week before surgery were excluded from the study

RESULTS:-

Out of the total 100 patients, bile culture was Positive in 10 patients. The most commonly isolated organisms were gram negative organisms. Escherichia *coli 6* (6%) was the predominant isolate followed by *S. lugdinensis 2 (*2%), and *Acinetobacterspp* 2(2%). Age wise distribution 6(6%) were female and 4(%) were male Maximum number of patients were females and in age group 40-50 years The gram negative isolates showed highest sensitivity to Gentamicin (100% sensitivity) followed by Ciprofloxacin (80% sensitive). Escherichia coli showed 90% sensitivity to both Ciprofloxacin (80% sensitive) and Gentamicin (100% sensitivity). The other antibiotics that were found effective were meropenem, imipenem, Cefepime and Piperacillin- tazobactam. Colistin (100%) and Polymyxin B (100%) were highly effective among the gram positive isolates, Vancomycin and Linezolid were the most effective showing 100%sensitivity.

Fig1:- Distribution of positive and negative of bile culture

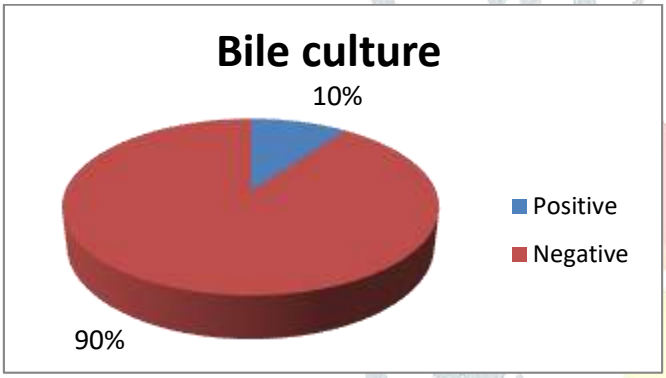


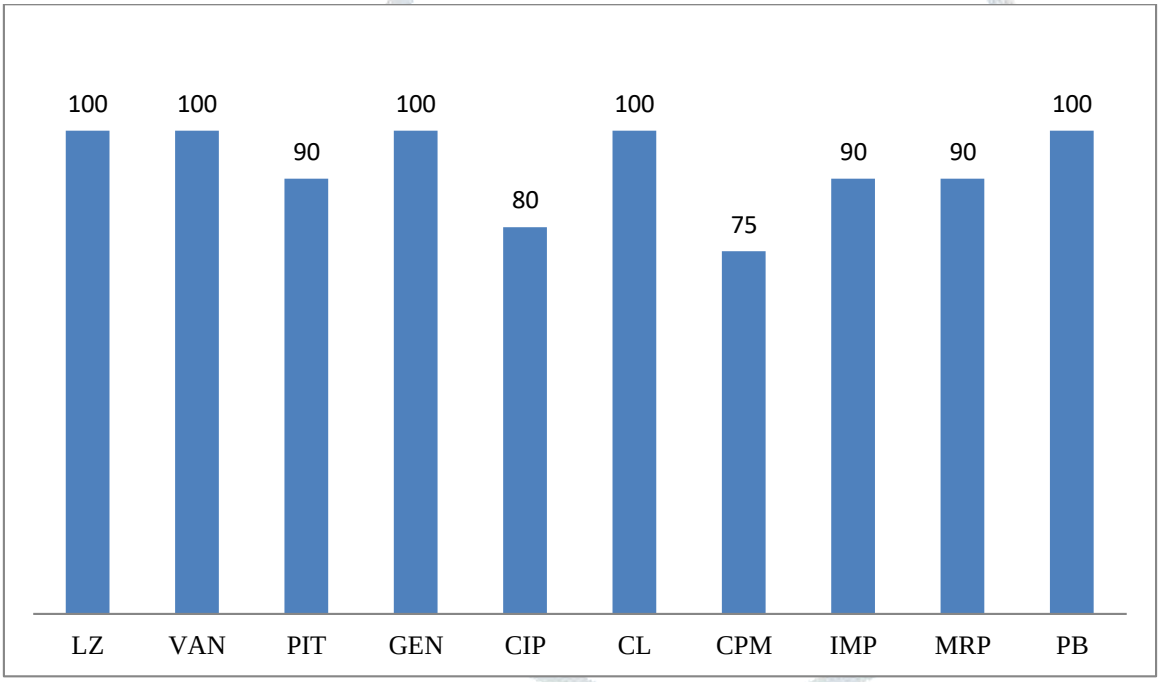
Table 1:- Gender wise Distribution of Positive cases (n=10)

Age	No. of cases		Total	Percentage %
	Male	Female		
<10	-	-	-	-
11-20	1	-	1	10
21-40	1	1	2	20
41-60	2	5	7	70
>61	-	-	-	-
Total	4	6	10	100

Table 2:- Organism wise Distribution of Positive cases (n=10)

Organisms	No. of Positive cases (n=10)	%
GRAM NEGATIVE BACTERIA	8	80%
E. coli	6	60%
Acinetobacterspp	2	20%
GRAM POSITIVE COCCI	2	20%
*S. lugdinensis (*2%),	2	20%
Total	10	100

Fig 2:- Antibiotic Sensitivity pattern of isolated Organism



DISSCUSSION:-

In the present study the prevalence rate is 10% this was more when compared with M. jawien et al[16] prevalence rate is 4.41% in Poland and less than Mohammad mazafer et al[17] in Iran and Sagun et al [18] from Nepal, the prevalence rate were 36.2% and 29.34%. In the present study female patients were 60% in this was similar to study conducted by Shervin et al[19] from Iran (91%). In the present study GPC (*Staphylococcus spp.)* were 2 isolates which was less then Sagun et al[18] (6 *Staphylococcus spp.*) and Jose et al[20] (4 *Staphylococcus spp.*) In the present study GNB were 8 isolates among which *E. coli* 6 (60%) isolates and *Acinetobacter spp (20%)*. which was similar to Sagun et al[18] *E. coli* 10 isolates (13.2%) and *Acinetobacter spp*. Were 2 isolates (2.6%) and less than Irfan[21] et al showing *E. coli* 17 isolates (28.7%). The gram negative isolates showed highest sensitivity to Gentamicin (100% sensitivity) followed by Ciprofloxacin (80% sensitive). Escherichia coli showed 90% sensitivity to both Ciprofloxacin (80% sensitive) and Gentamicin (100% sensitivity). The other antibiotics that were found effective were meropenem, imipenem, Cefepime and Piperacillin- tazobactam. Colistin (100%) and Polymyxin B (100%).

Among the gram positive isolates, Vancomycin and Linezolid were the most effective showing 100% sensitivity this was different from a study by Sagun et al[18] which showed Imipenem and Co-trimoxazole (100%), Ciprofloxacin (66.7%) Amikacin (33.3%) Ceftriaxone (67.7%) the isolates and sensitivity pattern varies in different geographical variation.

CONCLUSION:-

We conclude from this study that gall stone disease is common in female then in males and in the age group of 41-60 years and *E.coli* was the commonest isolate followed by *Acinetobacter* spp. And *Staphylococcal* spp. Gentamycin was the most sensitive antibiotic for GNB isolates and Vancomycin and Linezolid for GPC isolates. In this study *E.coli* was predominant bacteria causing recurrent cholecystitis. The common factor inducing infection was gall stone.

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