



ORIGINAL RESEARCH PAPER

General Surgery

A PROSPECTIVE STUDY OF ROLE OF BACTERIA IN GALL STONE DISEASE

KEY WORDS: Bile, Culture, Cholecystectomy, Antibiotic.

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ABSTRACT

Aim: To know organism most commonly found in bile, to study and compare the incidence of gall stone in culture negative versus culture positive bile. **Method:** bile will be collected from removed gall bladder after the patient undergoes cholecystectomy and subjected to culture and sensitivity, and the result of the organism found will be tabulated and incidence of which organism is highest will be known in the study and which antibiotic was it most sensitive to will be noted. **Results:** A total of 29 patients were included in the study. Out of 29 calculous cholelithiasis patients only 10 of them had positive bile culture. More than 50 percent of patients had growth belonging to the Enterobacter family, and highest sensitivity was for imipenem antibiotic.

INTRODUCTION

Cholelithiasis is a common surgical problem in Yenepoya medical college. Gall stone is one of the most common pathology seen in the biliary system and infection of the bile is commonly known to be associated with stone formation. Cholelithiasis represents a significant a major problem in the health system in both developed and developing nations and affect's 10% to 15% of the adult population. (9)

Gall bladder functions to concentrate bile, the concentration of solutes in the gall bladder differs from that in the rest of the biliary tree, this increase in the solute concentration in combination with stasis in the gall bladder between meals, predisposes to stone formation in the gall bladder. With progressing age, the incidence also increases, being more common in women than in men.

Gallstones are highly prevalent and the majority of patients are asymptomatic. There are 3 types of gall stones ie; cholesterol, pigment(brown/black), mixed, out of which 80% of stones seen in western countries are cholesterol stones, where as 80% of stones seen in asia are pigment stone or mixed stones.

Mixed stones are frequently associated with cholecystitis, which is most commonly attributed to infective etiology and mixed stone variety is the most common type in our population and majority of patients who underwent surgery here in our hospital.

MATERIALS AND METHODS

After ethical approval is obtained from the institution, patients who fit in to the inclusion criteria will be identified from surgery wards and icu. The study will be explained to the patient. After receiving consent, a structured proforma which includes general physical examination and per abdomen examination will be used for completing the examination.

Relevant laboratory and radiological investigations including liver function tests, bile culture and sensitivity, usg abdomen etc. bile will be collected from removed gall bladder after the patient undergoes cholecystectomy and subjected to culture and sensitivity.

RESULTS

A total of 29 patients were included in the study, out of which 13 patients belonged to age group of 21-40 years, 12 belonged to 41-60 years, 4 belonged to 61-80 years, mean age of study subjects was 45.21+14.206 years. 23 were female in the study group and 6 were males. Out of 29 calculous cholelithiasis patients only 10 of them had positive bile culture.

More than 50 percent of patients had growth belonging to the Enterobacter family, of which 50% of growth was E.coli, 10% had Enterococcus fecium, 20% had a mixed growth of E.coli, Klebsiella pneumonia, 10% had Pseudomonas growth. 79.3% of patient population with cholelithiasis were females and 20.7% were males, showing higher incidence in females in comparison to males.

TABLES AND FIGURES

TABLE:1

AGE GROUP	Frequency	Percent
21-40	13	44.8
41-60	12	41.4
61-80	4	13.8
Total	29	100.0

Mean age of the study subjects - 45.21 ± 14.206 years

AGE GROUP	GENDER		Total
	Female	Male	
21-40	11	2	13
	37.9%	6.9%	44.8%
41-60	8	4	12
	27.6%	13.8%	41.4%
61-80	4	0	4
	13.8%	0.0%	13.8%
Total	23	6	29
	79.3%	20.7%	100.0%

GENDER	Frequency	Percent
Female	23	79.3
Male	6	20.7
Total	29	100.0

GROWTH	Frequency	Percent
PRESENT	10	34.5
ABSENT	19	65.5
Total	29	100.0

DISCUSSION:

One of the most common problem affecting the digestive tract is the Gallstone disease. Various predisposing factors have been attributed for the development of gallstones such as Crohn's disease, hereditary spherocytosis, sickle cell disease, and thalassemia obesity, pregnancy, dietary factors, gastric surgery, terminal resection (4).

One of important factor implicated for gall stone formation is infection in the biliary tract. Which can be caused by any type aerobic gram positive to gram negative to anaerobic organism. Of which 94% of biliary tract infection is due to aerobic organisms and anaerobic being the rest.

Bile is normally sterile and in case of cholelithiasis and inflammation of gall bladder(cholecystitis), frequently bacteria is isolated.

Its been proved beyond any doubt and also again confirms in our study that the gall stone disease is more common in female population, especially in their 40's, as seen in our study highest incidence was in age group of 40-60 years in females. The incidence of gall stone disease in female to male ratio is 3:1. The cause for same could be attributed to increased VLDL in female and hormonal factors resulting in biliary stasis.

Incidence of positive culture is highest in patients with mixed stones in comparison to patients with pigment stones and cholesterol stones. which was proved by the Experimental model developed by Maki T, in which bacteria was injected into the gall bladder, which later lead to the formation of pigment stones and hence proving the the higher incidence of association of bacteria with mixed/pigment gall stones.

CONCLUSION

In our study we noted that majority of patients with gall stone disease were females, with highest incidence in females belonging to age group 41-60 years, and the organism most commonly found was E.coli.

So it can be concluded that gall stone disease is most frequently seen in women in perimenopausal age group with E.coli as most commonly associated organism. And as only 34.5% of the population with gall stone disease were culture positive, it's unlikely that infection is the sole reason for stone formation and it could just be a superadded factor causing symptom's in patients with gall stone disease, and the organism in biliary tree showed highest sensitivity to imipenem.

It would be a beneficial practice to culture the bile every time a cholecystectomy is done because, in case any post-operative bile leak occurs or intra-operative spillage of bile then managing peritonitis can be done with more specific group of antibiotics.

As this study contains a limited number of subjects a further continuation of this study may be required for more statistically significant conclusions.

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