

Original Articles

THE RESULTS OF CULTURE OF GALL-BLADDER, BILE AND GALL-STONES

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Abstract

Bacterial cultures and sensitivity were done on gall-bladder, bile stones and gall-bladder wall in 35 patients and positive cultures were obtained in nine (25.7%). The most effective antibiotics were Gentamycin and Ampiclox.

The incidence of post-operative complications appears to be significantly higher in patients with a positive culture.

Introduction

The presence of organisms and importance of infection in biliary operation is of great value and the organisms play an important role in the aetiology of certain post-operative complications (Haw and Gunn, 1973).

The types of organisms in the bile, gall-bladder wall and gall-stones vary from one study to another. The present study was designed to determine the bacterial pattern in biliary tract and the different types of antibiotics which could be administered in case of biliary infection. The incidence of post-operative complications in patients with positive culture was also studied.

Material and Method

Gall-stones, bile and a portion of gall-bladder wall were collected from operation theatre at the time of surgery in a sterile container. Thirty five patients were thus studied and the total number of specimens cultured were ninety eight. Soon after the collection the specimens were plated on MacConkey's nutrient agar and blood agar plates and incubated aerobically at 37°C for 24 hours. The gallstones were crushed by means of a sterile rod and a portion was used for culture. After 24 hours incubation, positive cultures were identified and subjected to sensitivity test. Antibiotic sensitivities were determined by the paper disc method.

Results

Nine (25.7%) positive cultures were obtained out of a total of 35 cases studied (Table 1). Of 27 specimens of gall-bladder wall, bile and stones, 25 were positive and identical results were obtained in all. No growth was observed in the remaining 2 specimens of gall-stones.

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Table I: Positive and Negative Culture in the Gall Bladder, Bile and Gall Stones

Growth	Number	%
Sterile (No growth)	26	74.2%
Positive Growth	9	25.8%
Organisms from Gall bladder	9	100 %
Organisms from Bile	9	100 %
Organisms from Gall stones	7	77.7%

Different types of organisms were identified, E. Coli was the commonest (44.4%), Pseudomonas was obtained in two (22.2%) and Salmonella typhi in one (11.1%) (Table II).

Table II: Organisms Cultured from the Gall Bladder, Bile and Gall Stones

Organisms	Over-All Incidence
E. Coli	4 44.4%
Ps. Pyocyanea	2 22.2%
Salmonella typhi	1 11.1%
Aerobacter Sp.	2 22.2%

Sensitivity tests were carried out with various antibiotics and the most effective were Gentamycin and Streptomycin (88%). Ampiclox, Ampicillin and Carbencillin were also found to be useful (67%). Sensitivity to chloramphenicol and Tetracyclin was quite poor (Table III).

Table III: Antibiotic Sensitivities to Organisms Recorded from the Gall Bladder, Bile and Gall Stones

Antibiotics	Number	Sensitive
Streptomycin	6	66.6%
Ampiclox	7	77.7%
Carbencillin	5	55.5%
Amoxycillin	5	55.5%
Kanamycin	2	22.2%
Ampicillin	3	33.3%
Lincomycin	2	22.2%
Gentamycin	7	77.7%
Chloramphenicol	1	11.1%
Tetracyclin	2	22.2%

Table IV: Post Operative Complications in Patients with Positive Culture

Positive Culture	Post-Operative Complication
E. Coli	Fever, Jaundice
E. Coli	Fever
Pseudomonas Sp.	Wound infection
S. Typhi	Paralytic ileus
Total 4	44.4%

Post-operative complications such as jaundice, fever and wound infection occurred more frequently (44.4%) in patients with positive culture (Table IV). There was no correlation between liver function tests and the incidence of post-operative complications.

Discussion

The results of the study suggest that or-

ganisms found in the gall-bladder, bile and stones were unlikely to be contaminant since identical organisms were isolated from all the three specimens. Although the number of patients studied was a small frequency of 25.7% positive bile culture is quite significant. Similar figures were obtained by Haw and Gunn (1973) in a series of 351 patients but Keighley and Graham (1973) recorded a higher incidence of 41% positive culture in a study of 87 patients in whom both aerobic and anaerobic cultures were performed. Seventeen per cent of these positive cultures were due to anaerobic organisms. It appears that the percentage of positive culture would have increased if anaerobic cultures were also performed. Stalport and his colleagues (1972) surveyed 105 patients where bacteriological studies on gall-bladder, bile duct and duodenum were done, and found 8.5 per cent positive cultures, but in patients with common bile duct obstruction the percentage of positive culture was increased to 29.5 per cent. They also observed a significant increase in positive cultures with advancing age.

E. Coli was the commonest organism identified as has been well documented. *Salmonella typhi* is known to occur in bile and gall-bladder wall in patients who have suffered from enteric fever and may remain dormant for a long period of time. One such case was recorded in this series.

The antibiotics commonly found to be effective are shown in Table III but of these Gentamycin and Ampiclox appear to be more effective than other antibiotics in current use.

The association of positive bile culture and postoperative complications has been observed by several authors (Haw and Gunn, 1973). Contrary to this Keighley and Graham (1973) could not confirm this observation. In the present study of nine patients with positive cultures postoperative complications were recorded in four and all responded satisfactorily to appropriate antibiotic therapy. Routine bile culture in patients under-going operation for biliary tract disease is a useful procedure and can reduce morbidity and complications by early institution of appropriate therapy.

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CARCINOMA OF GALL BLADDER

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Abstract

A study of 118 newly diagnosed patients with gallbladder disease during a two year period showed that the frequency of gall-bladder cancer was 8.4% and cholelithiasis played a significant role in its etiology. No remarkable differences were observed in the clinical and biochemical findings between the benign and malignant disease of gall-bladder.

Introduction

Geographical differences have been observed in the frequency and the clinical pattern of cancer of the gall bladder. In western series, (Cooke et al., 1953; Marcial and Medina, 1961; Beltz and Conden, 1974; Arianoff et al., 1974; Moossa et al., 1975; Richard and Cantin, 1976) the incidence varied from 0.27% to 4% and the disease is primarily seen in elderly females whereas in Karachi it is seen at a younger age and the frequency also appears to be high.

The purpose of this study was to ascertain the frequency and the clinical pattern of gall bladder malignancy, its relation to gallstones and the differences between the benign and malignant disease of the gall bladder.

Material and Method

A clinical, biochemical and histological analysis of 118 cases operated for gall bladder disease at the Department of Surgery, Jinnah Postgraduate Medical Centre from February, 1974 to February, 1976 was done.

The age, sex and clinical features of histologically confirmed cases of cancer and benign gall bladder disease were recorded. The findings were compared with the reported series from other parts of the world.

Results

Of 118 patients operated for gall bladder

Table II: Biochemical Findings

disease 10 were histologically confirmed cases of cancer.

Age and Sex

The ages in the cancer group varied from 30 to 60 years (average 45.4 years) and in the benign group from 20-80 years (average 40.2 years). The female to male ratio in the former group was 9:1 and in the latter 5.8:1.

Clinical Features

The clinical features are shown in Table I. In both the groups the main presenting symptoms were right upper quadrant or epigastric pain, nausea, vomiting and fever. The pain was dull and intermittent at the onset and gradually became continuous in the malignant group but the patients with benign disease had intermittent episodes of colicky pain.

Jaundice, a palpable lump in the right hypochondrium and hepatic enlargement were more frequent in patients with gall bladder cancer. The average duration of symptoms was less than 5 years in all cancer patients and in 81.9% of patients with benign disease. Of the 10 patients with cancer 9 had cholelithiasis. Eight patients had mixed infective and 1 cholesterol gall stones.

Table I: Clinical Features of Benign and Malignant Gall Bladder Disease

Clinical Features	Benign (108)	Malignant(10)
	No. of cases (%)	No. of cases (%)
Pain Abdomen ..	106 (98.8)	9 (90)
Nausea and vomiting ..	72 (67.1)	6 (60)
Fever ..	49 (45.7)	4(40)
Jaundice ..	22 (21.2)	5 (50)
Palpable lump ..	42 (39.3)	7 (70)
Hepatomegaly ..	27 (25)	5 (50)
Average weight (lbs) ..	110	103
Range ..	(72—188)	(65—130)

Investigations

Table II shows the biochemical findings. Levels of bilirubin, alkaline phosphatase and SGOT were significantly ($P < 0.05$) higher in the malignant group. Oral cholecystogram was done in all the cases. Gall bladder was not visualized in any of the cases of gall bladder cancer.

Seven patients had adenocarcinoma, two squamous cell carcinoma and one undifferentiated carcinoma. The frequency of gall bladder cancer in this series was 8.4%.

Discussion

A high frequency of gall bladder cancer has been observed in American Indians and in jews particularly those born in Asia and Africa

(Waterhouse et al., 1976). In Pakistan the frequency varies from 6-8%. Of 94 patients operated by Yaqin and Parmar (1976) for cholelithiasis 6(6.3%) had carcinoma. Thirty-two (6.6%) cases of gall bladder cancer were detected among 482 specimens of surgically removed gall bladders sent to the department of pathology, Jinnah Postgraduate Medical Centre over a period of 6 years (1970-1975). Of these 76.2% had adenocarcinoma, 14.2% squamous cell carcinoma and 0.9% undifferentiated carcinoma (Jafarey 1976).

The clinical features of cancer were indistinguishable from those of cholelithiasis as has been reported in other series (Richard and Cantin, 1976; Moossa et al., 1975; Tanga and Ewing, 1972) but the age and sex distribution was different. The age in other studies (Marcial and Medina, 1961; Beltz and Condon, 1974; varied from 60-70 years and no case of cancer was encountered below the age 50 (Arianoff et al., 1974) and two third of the patients were above the age of 70 years. In the present series no cancer was seen above the age of 60 years and 50% of the patients were below the age of 50. This age difference may be more apparent than real as the life expectancy in Pakistan is low (22.6 years) but even after adjusting the present data according to the age and sex distribution in the total population of Karachi, 90% of cancer occurred below the age of 60 while in a recent study from Canada, Richard and Cantin (1976) showed that 84% of their cases were above the age of 60 years.

The female to male ratio in other studies (Strauch, 1960; Arianoff et al., 1974; Moossa et al., 1975; Richard and Cantin, 1976) varied from 3:1 and 4:1 while in this study it was 9:1.

Fifty-seven to 100% of patients with carcinoma of gall bladder were found to have gall stones (Arminski, 1949; Strauch, 1960; Hart et al., 1971) in other series and 90% in this study. The etiological relationship between cancer and cholelithiasis is not clear. Gall stones may predispose or both may have similar etiological factors. Analysis of stones showed that 8(88.8%) were mixed infective and one cholesterol stone. These figures are consistent with those of Cooke et al.

Investigations	Benign No. (108)		Malignant No. (10)	
	Mean±S.E.	Range	Mean±S.E.	Range
Bilirubin total (mg%) ..	2. 0±0.33	0.25—18.6	5.5± 2.6	8.3—23.7
Alkaline Phosphatase (B.L.U.) ..	4.7±0.33	0.1—23.2	6.4± 1.7	1.8—18.0
SGOT (mu/ml) ..	21.2±2.35	0.1—99.0	31.6±10.5	8.0—52.0
SGPT (mu/ml) ..	14.3±2.11	0.6—10.0	15.6±6.71	3.0—39.0

(1953). The majority of tumours as has previously been observed by others (Beltz and Condon, 1974) were adenocarcinomas.

This pattern of gall bladder cancer may be due to malnutrition resulting in depressed immune response, poor dietary habits, repeated infections and multiple pregnancies. These factors singly or in association with others may produce biochemical alterations in bile or morphological changes in gall bladder which predispose subsequent development of malignancy.

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