

# INCIDENCE OF BACTEREMIA IN PATIENTS WITH OPISTHORCHIASIS DURING RECURRENT CHOLANGITIS

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## INTRODUCTION

Common features in severe opisthorchiasis are obstruction of biliary system and recurrent cholangitis (Pungpak *et al.*, 1985). The patients may succumb to a septic shock. Although numerous reports have been published describing the bacterial infections of the biliary tract in pathological states, (Flemma *et al.*, 1967; Mason, 1968; Kune *et al.*, 1974) no data in patients with opisthorchiasis has been recorded.

The purpose of this study is to investigate the occurrence of bacteremia in opisthorchiasis during intermittent cholangitis, and the effectiveness of the antibiotics to be used as an adjuvant to anthelmintics.

## MATERIALS AND METHODS

Patients who came to the Bangkok Hospital for Tropical Diseases, Thailand during July 1982-December 1986 for treatment of *Opisthorchis viverrini* infection were selected for this study. A total of 144 patients had clinical features of severe infection. The symptoms were obstructive jaundice associated with secondary infection of biliary system, cholangitis, cholecystitis, and intra-abdominal mass which consisted of enlarged liver or gallbladder.

Blood cultures were performed in those patients who presented with clinical signs and symptoms of cholangitis or cholecystitis. These conditions were characterised by intermittent jaundice and fever. The peak of body temperature was above 38°C for at least 3 days continuously. During each episode, three blood samples were drawn from different sites at half hourly intervals and were cultured by aerobic method. Both aerobic and anaerobic cultures were done in 12 patients. Routine antibiotic sensitivity tests were run on the pathogens.

Immunoelectrophoresis (IEP) for *Entamoeba histolytica*, surface hepatitis B antigen and antihepatitis B were performed in all cases in order to rule out amoebic liver abscess and viral hepatitis. The results of these tests were negative.

Fifty out of 144 patients (34.7%) were enrolled in the study. There were 42 males and 8 females, aged 23-69 years. The peak of body temperatures ranged from 38-40.6°C. There were 77 episodes of recurrent biliary tract infection. The frequency varied from 1 to 5 attacks in each patient, 34 patients had one episode and 16 patients had recurrent cholangitis. Five patients had clinical signs of septic shock following acute cholangitis.

Praziquantel was given to all patients at the dosage of 75 mg per kg body weight in 5 divided doses. 28 patients received various courses of antibiotics which were co-trimoxazole, erythromycin, penicillin G sodium, ampicillin, kanamycin, and gentamicin, or the combination of ampicillin and the last two aminoglycosides.

### RESULTS

Total 257 blood samples were collected; 221 and 36 cultures were performed by aerobic and anaerobic methods respectively. 31 aerobic (14%) and 4 anaerobic (11.1%) cultures were positive in 19 patients. Types of organism and frequency of positive cultures are shown in Table 1. The most common organism was *Staphylococcus coagulase negative*, followed by *Klebsiella* and *Bacillus* spp. Mixed two aerobic organisms found in 2 patients; and mixed aerobic and anaerobic bacteremia occurred in one patient. Two patients had repeated positive haemocultures of different organisms in their 2 and 3 episodes of infection.

The relation between age of the patient and incidence of positive haemoculture is shown in Table 2. The high incidence of recurrent cholangitis was observed in the patients over the age of 40. The percentages of positive haemoculture were similar in all age groups.

Ten pathogens were tested for sensitivity to antibiotics. The organisms were most sensitive to antibiotics cefotaxime, cephalothin, kanamycin and chloramphenicol, moderately sensitive to gentamicin, tetracycline and co-trimoxazole and the least sensitive to streptomycin, carbenicillin, penicillin and ampicillin.

Eleven out of 17 patients who received praziquantel without antibiotics recovered

Table 1  
Type of organisms from haemoculture and number of positive culture in 50 patients with opisthorchiasis.

Organisms	No. of positive culture	Percentage
Aerobic:		
<i>Staphylococcus coag. neg.</i>	8	22.8
<i>Klebsiella</i>	6	17.1
<i>Bacillus</i> spp.	5	14.2
<i>Enterococcus</i>	3	8.5
♣- <i>Streptococcus</i>	3	8.5
<i>Diphtheroid</i>	3	8.5
<i>Pseudomonas</i>	3	8.5
<i>Escherichia coli</i>	2	5.7
<i>Streptococcus</i> group D	1	2.8
Anaerobic:		
<i>Streptococcus</i>	2	3.7
♣- <i>Streptococcus</i>	1	2.8
Gram negative rod	1	2.8

Table 2  
Relation of age to positive haemoculture.

Age years	No. of patients	No. of positive haemoculture (%)
20-30	4	1 (25)
31-40	8	6 (75)
41-50	11	6 (54.5)
51-60	21	6 (28.6)
61 and over	6	0 (0)
Total	50	19

from acute cholangitis; 33 patients received praziquantel and antibiotics; 10 patients completely recovered and 3 showed partial response.

Among 5 septic shock patients, the haemocultures were positive *Pseudomonas* spp. from 2 patients, *Staphylococcus coagulase* negative in one patient and no growth in 2 patients. One patient died and the haemoculture was negative. The patient who had staphylococcal septicemic shock, acquired the infection in the hospital during the third episode of cholangitis.

Leucocytosis was observed in 83%. The rest had normal white blood count or leucopenia. One female patient had persisting low white blood count during 2 attacks of acute cholangitis. The white cell count ranged from 2,800–4,000 per c.mm with neutrophils 14–31%. During the second attack all three haemocultures grew *Pseudomonas* spp.

#### DISCUSSION

Normal bile is bacteriologically sterile. If there was obstruction of biliary tract by stones, tumor or other causes, cholangitis would take place. Septicaemia following cholangitis often occur and may produce as fulminant outcome as evident in this study.

Coagulase negative staphylococci are well recognized as common cause of infection around prosthetic devices, dialysis catheter and in-dwelling intravenous lines. They are also common contaminants as they are part of normal skin flora. Many of our patients were debilitated and required long standing intravenous fluid therapy. The high frequency of blood culture positive for staphylococci in this study indicates nosocomial infection.

The enteric organisms are the next common organisms isolated from haemoculture. These organisms are originally in the gastrointestinal tract and often found in the biliary system (Kune *et al.*, 1974; Flemma *et al.*, 1967; Mason, 1968; Ong, 1962)

indicating that in most cases the organisms are derived from the contaminated bile.

The significant relationship between the age of the patient and the incidence of positive haemoculture is not observed in this study, as well as the occurrence of severe complications. Septic shock occurred in the patients aged group of 40 to 50 years and only one patient 60 years old who had staphylococcal septicemia. These findings are in contrast to the previous reports. Mason (1968) and Pyrtex *et al.*, (1967) observed significant rise of bacterial detections from biliary tracts in older patients over the age of 60 years.

Many investigators have observed similar anaerobic bacteria in the biliary systems. These were *Bacteroides fragilis*, *Streptococcus faecalis* and other non-sporing anaerobes. *Clostridia* spp. were also frequently isolated from the infected gallbladder (Fukunaga, 1973; Maddocks *et al.*, 1973; Nielsen *et al.*, 1976; Turner, 1964). In this study, haemocultures done by anaerobic method in 12 patients were found to be positive in 4, but none contained *Clostridium*.

*In vitro* testing, most organisms were sensitive to new cephalosporin, kanamycin and chloramphenicol. Ampicillin was the least effective antibiotic. Maddocks *et al.*, (1973) also found few organisms isolated from the biliary system susceptible to this antibiotic. Ampicillin is widely used in this country for all types of infection, probably this might create resistance of organisms to this antibiotic.

In conclusion, in patients with severe opisthorchiasis who had obstructive jaundice and acute cholangitis, one-third presented with bacteremia, 5 patients had septic shock. *Staphylococcus* and enteric organisms were commonly isolated from haemoculture. Few anaerobic bacteria caused septicaemia.

These organisms were mostly sensitive to cefotaxime, cephalothin, kanamycin and less susceptible to ampicillin.

The use of antibiotics as an adjunct to anthelmintics in opisthorchiasis with acute cholangitis is of value. However, recurrent cholangitis after cessation of antibiotic therapy has been observed in 16 patients. This may be that the liver flukes had probably produced permanent pathological damage of the biliary tract, or there is malignancy of the biliary tract and cause chronic infection. Palliative surgery to relieve biliary obstruction would be the next procedure.

#### SUMMARY

A total of 257 haemocultures were performed in 50 patients with opisthorchiasis when they presented signs and symptoms of biliary tract infection. 19 patients showed positive haemoculture. There are no significant relationship between the age of the patient and the incidence of positive haemoculture. Septic shock occurred in 5 patients., one patient died. Out of 221 aerobic cultures, 14% were positive and of the 36 anaerobic cultures 11% were positive. The most common organism was *Staphylococcus* followed by *Klebsiella* and *Bacillus* spp. Anaerobic bacterias were *Streptococcus* spp. *Clostridia* spp. was not found in this study. Most organisms were sensitive to cefotaxime, cephalothin, kanamycin and chloramphenicol, and the least sensitive to ampicillin.

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