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AEROMONAS CAVIAE INFECTION IN A FEMALE WITH MULTIPLE CHOLEDOCHOLITHIASIS

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ABSTRACT

A 34-year old female patient underwent cholecystectomy 10 years back for gall bladder stones. Since 3 years, she complained of recurrent episodes of abdominal pain in epigastric region and vomiting. Investigations revealed stones in the common bile duct (CBD). Major CBD exploration was done and stones were removed. Bile was sent for culture which grew *Aeromonas caviae* and *Escherichia coli*. *Aeromonas* infection of biliary tract is quite common in South East Asia, but rarely seen in India. We report here a case of *Aeromonas caviae* in biliary infection. Early diagnosis of *Aeromonas* infection of biliary tract following instrumentation/surgery is required.

Key Words: *Aeromonas Caviae, Cholelithiasis, Rare*

INTRODUCTION

Aeromonas is a potential pathogen causing gastroenteritis and a wide spectrum of extraintestinal infections, Chan *et al.*, (2000). Among the various extraintestinal manifestations, biliary sepsis is a rare event, the risk factors of which are cholelithiasis, cholangiocarcinoma and biliary tract instrumentation, Ko and Chuang, (1995). The role of *Aeromonas* in cholangitis is of special interest in South East Asia, Chan *et al.*, (2000). The condition is characterized by multiple intrahepatic bile duct stones, strictures and dilatations, leading to regurgitation of infected bile into the circulation and recurrent attacks of septicaemia, Leung and Yu, (1997).

From India, *Aeromonas caviae* from a case of cholecystitis has been reported in 2000, Kumar *et al.*, (2000). We report here another case, which to the best of our knowledge is the second case report of *Aeromonas caviae* in biliary infection from India.

CASES

A 34-year old female was hospitalized with complaints of recurrent episodes of pain in the right upper abdomen, along with fever and vomiting for the past 3 years. She had a cholecystectomy done 10 years back for gall bladder stones. There was no history of any concurrent medical illness.

On examination, she was a febrile with no pallor and no icterus present. Per abdominal examination revealed tenderness in the right hypochondriac region, but there were no guarding and rigidity. No abnormality was detected in cardiovascular, respiratory and central nervous systems.

Her laboratory investigations of complete blood count showed haemoglobin of 12 gm%, total leucocyte count 10,000/cu.mm. with 80% neutrophils, 18% lymphocytes, 1% eosinophil and 1% monocyte. Her total bilirubin was 0.6 mg, SGOT 5 KU and alkaline phosphatase 318 IU/L. Blood urea nitrogen was 8 mg/dl and serum creatinine 0.8 mg/dl. Urine routine examination revealed bile salts and bile pigments. In gall bladder fluid cytology, granular material was seen but no cells were present. Her random blood sugar was 101 mg, serum sodium 144 mg and serum potassium 4.5 mg.

Ultrasound of abdomen showed dilated common bile duct with hyperechoic foci and shadowing in suprapancreatic common bile duct (CBD), suggestive of calculi. Endoscopic retrograde cholangiopancreatography (ERCP) showed multiple stones of large size.

Mechanical lithotripsy for removal of CBD stones was performed on the patient on the third day of admission. With a sterile syringe, 3 ml of bile was aspirated and sent for culture. Bile was directly subcultured on blood agar (BA) and MacConkey (MA) agar and incubated overnight at 37°C. On the

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second day, 2 types of colonies grew on MA – lactose fermenting (LF) and non-lactose fermenting (NLF) colonies. On BA also, 2 types of colonies were seen with similar morphotype as those grown in MA. The isolates were identified by standard biochemical tests, Winn *et al.*, (2006). Antibiotic susceptibility was performed on Mueller Hinton agar by Kirby-Bauer Disc Diffusion Method (KBDDM) as per CLSI guidelines. Clinical Laboratory Standards Institute M45-A2 Guideline (August 2010).

The LF colonies were identified as *Escherichia coli*, sensitive only to amikacin. The NLF colonies were identified as *Aeromonas caviae* biotype *eucrenophila* based on fermentation of sugars, gas from glucose, esculin hydrolysis, Voges-Proskauer test and decarboxylase tests, Winn *et al.*, (2006). The latter isolate was sensitive to amikacin, ciprofloxacin, cefotaxime, ceftriaxone and ceftiofime, but resistant to ampicillin. Blood was also received for culture in trypticase soy broth, but it did not show any growth.

The patient showed rapid improvement after successful drainage of biliary obstruction. She was given 1 dose of cefotaxime and amikacin combination peri-operatively I/V, and the same combination for 7 days post-operatively (first 2 days I/V and later 5 days I/M). She recovered uneventfully and was discharged after 10 days of hospitalization.

DISCUSSIONS

Although the overall frequency of *Aeromonas* in acute suppurative cholangitis is low (< 3%), the disease is common in Asia and patients with hepatobiliary pathology are susceptible, Chan *et al.*, (2000). The source of *Aeromonas* in biliary sepsis is unclear, but mostly is thought to originate in the gastrointestinal tract, Ketover *et al.*, (1973). Instrumentation or previous exploration of the biliary tract might facilitate bacterial invasion of the biliary tract, as is seen in the present case. Colonization of the biliary tract is further facilitated by presence of sludge in bile that acts as a nidus for bacterial colonization and biofilm formation, Sung *et al.*, (1993). Therefore ascending biliary infection secondary to instrumentation could be another important portal of *Aeromonas* infection.

Evidence of hepatobiliary infection is based on the basis of following criteria – fever; endoscopic or radiologic evidence of biliary tract obstruction due to stones, stricture or tumor; and positive bile and/or blood culture, Chan *et al.*, (2000). This case subserved all the above criteria of hepatobiliary infection.

Only few cases of cholelithiasis caused by *Aeromonas species* have been reported in literature, Chan *et al.*, (2000); Clark and Chenoweth, (2003). From India, *A.caviae* has been reported from a case of cholecystitis, Kumar *et al.*, (2000). To the best of our knowledge, this is the second documented case report of *A.caviae* in biliary infection from India.

A study from Hong Kong has reported *Aeromonas* infections in 2.9% cases of acute suppurative cholangitis, with *A.hydrophila* accounting for 93.4% of these infections and *A. caviae* in 3.3% Chan *et al.*, (2000). Eighty percent of them had bile duct stones and 81% had previous attacks of cholangitis. In a report from Chicago, *Aeromonas* infection of biliary tract accounted for hospital admissions for cholangitis, of which 7 out of 15 patients had choledocholithiasis, Clark and Chenoweth, (2003) Obstruction of the biliary tract is a frequent predisposing factor for *Aeromonas* infection, Clark and Chenoweth (2003), which is also seen in the present case. Mortality reported in various studies varies from 10% - 12%, Chan *et al.*, (2000), Clark and Chenoweth, (2003).

The study from Hong Kong reported *A.caviae* susceptible to all antibiotics except ampicillin, Chan *et al.*, (2000), as is also the case reported here. None of the *Aeromonas species* reported in previous studies were sensitive to ampicillin, Chan *et al.*, (2000); Clark and Chenoweth (2003).

Empirical treatment of biliary infections are usually by ampicillin-sulbactam or piperacillin, but this may be ineffective if *Aeromonas species* are present, Clark and Chenoweth (2003), as was seen in this case. Moreover clinical characteristics are not specific enough to differentiate *Aeromonas* from other Gram-negative bacilli. The antimicrobials most effective against *Aeromonas* are third generation cephalosporins, quinolones and imipenem, Clark and Chenoweth (2003).

Therefore, early diagnosis of *Aeromonas* infection of the biliary tract and antibiotic susceptibility testing are required for immediate institution of proper treatment and better clinical outcome. For any

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intervention of the biliary tract, bile should be sent routinely for culture for proper identification and prompt patient management.

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