CASE REPORT

Cholelithiasis in children

by

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Abstract.

Gallstone disease is very rare in children. This communication is a report on three cases of cholelithiasis in children found in the last four years in Harapan Kita Hospital, Jakarta. They were all girls of 11, 5 and 9 years old respectively. The etiologic factors were Salmonellosis, Congenital stenosis of the distal end of CBD and Thalassemia. All patients were survive and well after surgical treatment. Ultrasonography gives a big contribution in diagnosing an acquired obstruction of the extra hepatic biliary system.

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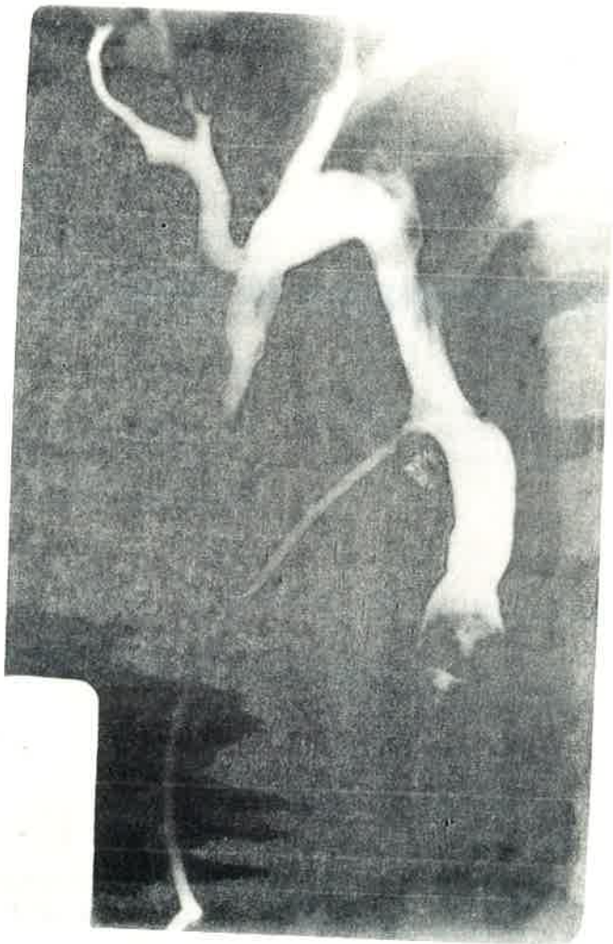
FIGURE 1. : *The operative cholangiography of case no. 1. It shows almost a complete obstruction of the distal common bile duct (CBD).*



Introduction.

Gallstone disease is traditionally thought of as a disease of middle aged and obese women (the fair, fat, forty-year old female), while cholelithiasis in children is very rare. In the literature (Sornaik et al., 1980) cholelithiasis in children is commonly known to be associated with hemolytic anemia, the prevalence rate varying from 10 to 70% of the total gallstone cases found in children.

This is a report of three cases of cholelithiasis in children found by the authors after 1980.

Case report.

Patient 1.

An 11 years old girl was hospitalized because of right upper abdominal pain with progressive jaundice. There was a history of typhoid fever 3 months prior to admission. On physical examination there was right upper quadrant local peritonitis and marked jaundice. Serum bilirubin was 9.2 mg% of which the direct fraction was 8.8 mg%. Alkaline phosphatase, SGOT, SGPT values were also elevated. Ultrasonography (USG) showed obstruction of the extra hepatic duct with multiple common bile duct calculi.

Operation revealed that the gall bladder and common bile duct were dilated under increased intraluminal pressure. Cholangiography during operation showed obstruction of the distal choledochus due to stones (Fig.1). Choledochotomy appeared inadequate to remove the stones, so that duodenotomy with sphincterectomy was performed. Cholecystectomy and T-tube choledochostomy were done before wound closure. Histology of the gall bladder showed signs of chronic inflammation. The biliary calculi were composed of cholesterol pigment. Post operatively, jaundice resolved in 7 days and T-tube was removed on the 10th day. She was well when last seen 10 months later.

Comment :

It is known that gallstone might be formed by an interface or seed formation by bacteria (Salmonella), desquamated cells and precipitated with bile salt or cholesterol.

Patient 2.

A 5 years old girl had persistent jaundice of 2 months duration. There was a history of fulminant hepatitis for the last 2 years. USG showed dilation of the common bile duct with stone shadows at the distal end. On operation the gallbladder and common bile duct were markedly dilated. Exploration of the common bile duct through choledochotomy revealed a lot of easily breakable green stones and pinhole sphincter. Sphincterectomy through duodenotomy and cholecystectomy was done in this patient.

The biliary histology was compatible with chronic cholecystitis. The biliary calculi were mostly formed by green bile. Post operative course was uneventful. She was seen 6 months later with almost normal liver function though she is not gaining weight properly.

Comment :

This is a case of congenital stenosis of the distal end of the common bile duct causing bile stasis and presenting itself as fulminating hepatitis.

Patient 3.

A thalassemic girl was routinely examined by one of the authors up to the age of 3 years and was then referred to a pediatric hematologist. Splenectomy was done at age 4. Three years after splenectomy she began to contract repurrent abdominal pain. Plain abdominal X-ray taken at the age of 9 showed radiopaque stones in the gallbladder. Removal of the stones and cholecystectomy were done. She was well there after except for the thalassemia.

Comment :

This is a case of biliary calculi, which in the past is believed to be the most common bile stone disease found in children. The stone formation was a secondary precipitation of the unconjugated bilirubin as a result of the chronic hemolytic process in thalassemia children.

Discussion.

Gallstone formation occurs as a consequence of the loss of solubility of one of the components of the bile i.e. bile salt, cholesterol, phospholipid, bilirubin and trace elements. Fundamentally gallstones are composed of a mixture of cholesterol crystals and bile pigment. (Smith and Sherlock. 1981). "Pure" cholesterol stones are uncommon in children. Mixed cholesterol stones are due to cholesterol overproduction (mostly in obese children) or bile salt deficiency (disturbance of the enterohepatic circulation of the bile salt such as in the resected terminal ileum) (Pellerin et al., 1975).

The formation of pigment stones is usually the result of an increase in unconjugated bilirubin and is associated with hemolytic disorders, hepatic cirrhosis and bile stasis or secondary to bacterial infection of bile. Hemolysis leads to excessive amounts of water insoluble free bilirubin that precipitate the forming of pure pigment stones (Lilly, 1980). Bacterial infection such as the Salmonella group, E. coli, Clostridium Welchii and Klebsiella causes tissue damage producing desquamated cells as a core for crystal formation (Sutor and Wooley, 1973). Some of these stones have calcium deposits also and are radiopaque.

Whatever the type of gallstone, both cholesterol and pigmented stones are mostly formed in the gallbladder. Stone found in the common bile duct, or choledocholithiasis, usually originate from the gallbladder. Primary choledocholithiasis which is very uncommon, might be formed by an anomaly of the common bile duct or infection by certain parasites such as Clonorchis sinensis (Fung, 1961; Smith and Sherlock, 1981).

Clinical features.

The mayor symptoms arise from conditions such as migration of the stone, cholecystitis and regurgitation of bile into the stomach. Migration of the stone will manifest itself as biliary colics characterized by severe pain in the epigastric region radiating through the right side of the back even up into the right shoulder. Cholecystitis presents itself as local peritonitis of the right upper abdomen with or without jaundice. Regurgitation of the bile into the stomach, if any, will cause dyspepsia such as nausea,vomiting, and distention. Silent stones by definition, are completely symptomless and are only discovered accidentally during routine abdominal X-ray, or during laparotomy for another condition. In general the treatment of gallstones and their effect on the gallbladder is surgery. Cholecystectomy is recommended and in a case of stenosis, bile duct repair is a necessary. Dissolving gallstones by chenodeoxycholic acid in order to increase the solubility of cholesterol in gallbladder's bile is possible only with "pure" cholesterol stones, which however, is uncommon in children.

Diagnosis.

Most laboratory studies are of limited value for making the diagnosis. Leucocytosis and slight elevation of bilirubin are the most common findings. High amylase concentration generally indicate the involvement of pancreatitis. Plain film of the abdomen is more helpful in ruling out other diseases. Only in 10 to 15% of the cases are the gallstones radiopaque (Gadacz, 1981). Oral or intravenous cholangiography are most helpful, if the total bilirubin is less than 4 mg%. This examination was not done in our cases. Intraoperative cholangiography is compulsary for the exploration of the biliary duct, this detecting the presence of small and or residual stones. This procedure was done in case no. 1 & no. 2. Ultrasonography can be helpful in confirming the diagnosis, it is rapid and non invasive and can be performed in the presence of an elevated serum bilirubin. The HIDA scan is useful as a rapid and non invasive test, but the hospital is not equipped with it.

The three cases reported above had characteristic symptoms of gallstones, two cases (case 1 and 2) with obstructive jaundice and case 3 was an example of the gallstone disease as complication of chronic hemolytic anemia. Cholecystectomy was done in all three patients. Sphincterectomy of the papil were done in patient 1 and 2. The post operative course of these three patients were uneventful. Liver function tests 6 months and 3 years post operative were within normal limits. The patients had no abdominal pain and were non icteric.

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