

Case report

Epithelial dysplasia in Caroli's disease

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SUMMARY We report a young patient with a solitary intrahepatic cyst without demonstrable connection with the biliary tree. The operative appearances suggested hydatid disease but histological examination of the resected cyst showed that it was the result of Caroli's disease already complicated by severe dysplasia. This case provides further evidence for the premalignant nature of Caroli's disease.

Case history

A 37 year old woman was referred with a painless 15 cm cystic mass in the right upper quadrant of her abdomen. Ultrasound and CT scanning showed a complex cyst arising from the inferior aspect of the liver. The biliary anatomy, however, appeared normal and there were no cysts in the kidneys. Hydatid ELISA testing was negative and HIDA scintigraphy showed no communication between the cyst and the biliary tree. At laparotomy a solitary cyst was found replacing the peripheral part of the right lobe of the liver. As the appearance resembled hydatid disease the cyst was injected with hypertonic 5.8% saline. Aspiration of the cyst contents revealed clear fluid. The cyst was then excised with a narrow margin of normal liver. Macroscopic examination showed the cyst to be unilocular and smooth walled. A number of small (2-3 mm) pigmented calculi were present in the lumen.

On microscopy the cyst was predominantly lined by columnar epithelium but with foci of stratified or papillary epithelium showing severe cytological atypia (Fig. 1). Sections of adjacent liver revealed an irregular arrangement of portal tracts containing cystically dilated bile ducts, some of which contained soft bile calculi and showed cholangitis (Fig. 2). Elsewhere the epithelium was papillary and

exhibited varying degrees of dysplasia (Fig. 3). There was some periductal fibrosis but no formation of fibrous septa. No invasive carcinoma was found. A diagnosis of Caroli's disease complicated by severe dysplasia was made. Dysplasia did not extend to the plane of excision, and subsequent biopsies of the right and left hepatic lobes were normal. Subsequent percutaneous cholangiography showed a normal biliary tree. The patient remains well six months later.

Discussion

Caroli's disease is a congenital dilatation of intrahepatic bile ducts.¹ Its usual complications are biliary lithiasis, recurrent cholangitis and liver abscess formation. There are also, however, reports of its association with cholangiocarcinoma.^{2,3} This case report provides further evidence that Caroli's disease may be regarded as a premalignant condition.

Caroli's disease is not a distinct entity but part of a broad spectrum of cystic dilatation of the biliary tract including choledochal cyst, diverticulum, and choledochocoele^{4,5} and may have an association with congenital hepatic fibrosis.⁶ The 'simple' type I is manifest by biliary lithiasis, recurrent cholangitis, and liver abscess formation. Type II is associated with congenital hepatic fibrosis, cirrhosis and portal hypertension. Carcinoma is a well documented complication of choledochal cysts.⁷ Although Caroli's disease is a rare condition a similar predisposition to cholangiocarcinoma probably exists.^{2,3}

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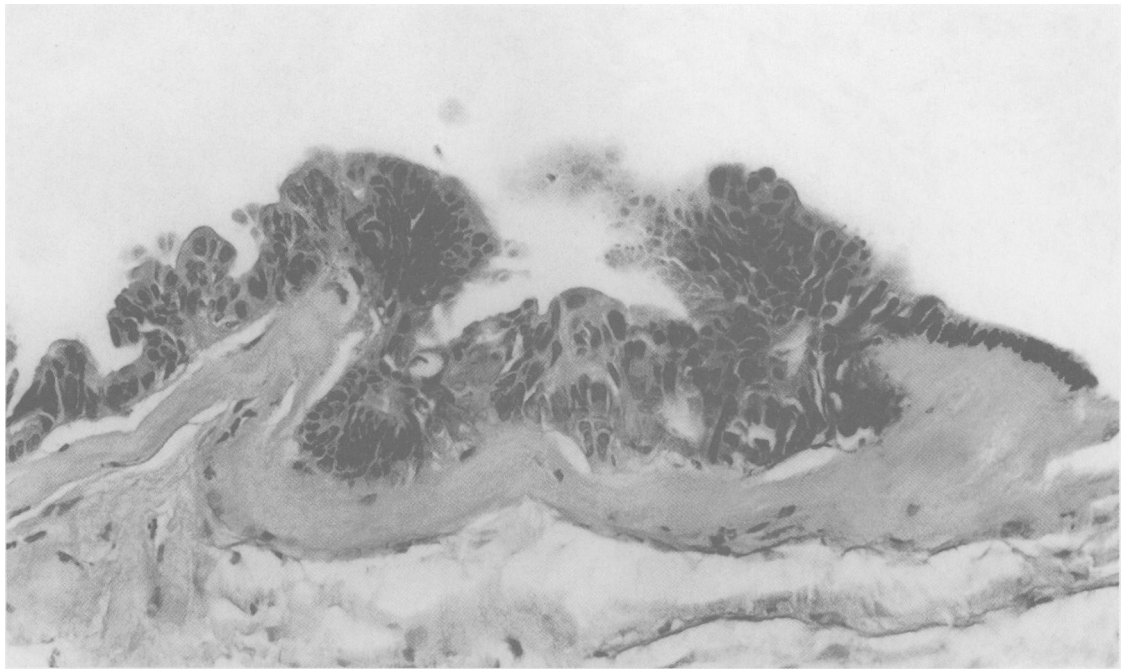


Fig. 1 Epithelial lining of the cyst: simple columnar epithelium (right) adjacent to papillary and cribriform epithelium exhibiting severe dysplasia.

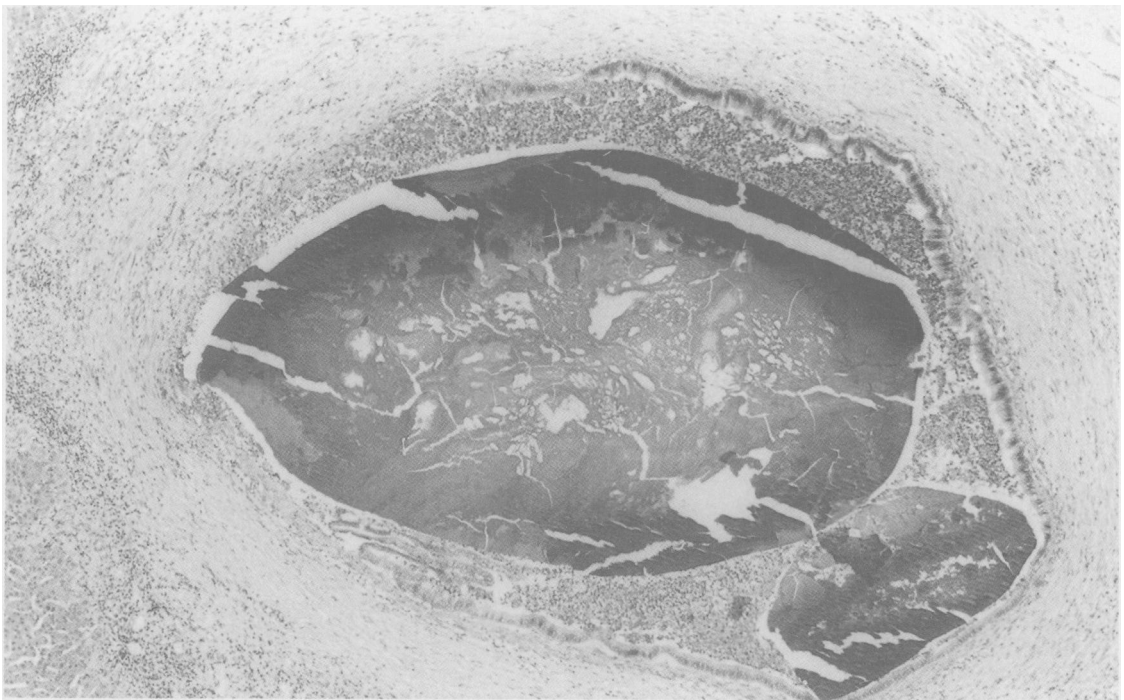


Fig. 2 Dilated bile duct showing acute-on-chronic cholangitis and containing a soft calculus.

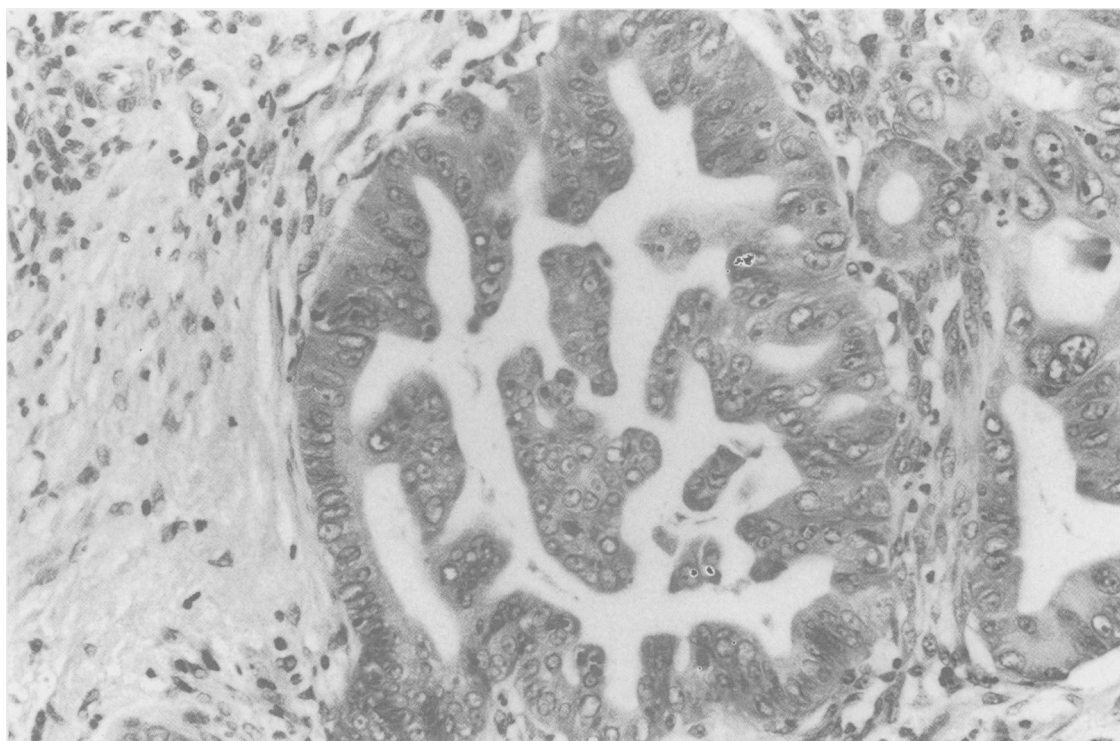


Fig. 3 Bile duct close to that in Fig. 2 lined by severely dysplastic papillary epithelium.

Several factors may be implicated in its aetiology – namely, chronic inflammation, bile stagnation and development of carcinogens,⁸ loss of protective mucin and finally an epithelium which is intrinsically liable to undergo neoplastic change. Cholangiocarcinoma has been reported in approximately 7% of patients with Caroli's disease, at a median age of 51 years.² In choledochal cysts the risk of malignancy probably increases with age.⁷ Epithelial dysplasia is a recognised premalignant lesion of biliary epithelium^{9,10} and we believe that its presence in our patient represents an earlier stage of neoplastic transformation than has previously been reported in Caroli's disease. If chronic inflammation and bile stagnation are of paramount importance in the aetiology, effective drainage would be expected to reduce the risk of malignancy. Internal drainage by Roux – Y choledochojejunostomy is recommended for the treatment of recurrent cholangitis, but it does not appear to protect against the development of cholangiocarcinoma.² This mirrors experience with choledochal cysts.¹¹ Successful treatment of Caroli's disease by hepatic resection has been reported.³ The patient we describe had clear resection margins and further biopsies of both lobes of liver showed normal

architecture. As the dysplastic changes in Caroli's disease are at microscopic level, there is no effective way of monitoring patients or of predicting the onset of malignancy. Adequate hepatic resection may therefore offer the only prospect of cure and of avoiding the possible development of cholangiocarcinoma in patients with localised segmental forms of Caroli's disease similar to that described here.

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