TRANSPLANT INTERNATIONAL

LETTER TO THE EDITORS

Focal nodular hyperplasia proceeds hepatocellular carcinoma in an adult with congenital absence of the portal vein

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Dear Sirs,

Congenital absence of the portal vein (CAPV) is a rare anomaly in which the splanchnic venous flow is diverted away from the liver and drains directly into the systemic circulation. CAPV is usually seen in children and associated with multiple anomalies such as cardiac failure, skeletal abnormities and hepatic tumours [1]. The majority of hepatic lesions include focal nodular hyperplasia (FNH) and other benign tumours. We describe the first case of successful orthotopic liver transplantation (OLT) of an adult suffering from CAPV and hepatocellular carcinoma (HCC). Furthermore, our case indicates a transformation from FNH to HCC in an adult patient with CAPV.

A 38-year-old woman was admitted to our hospital for further evaluation of hepatic nodules found by computed tomography (CT) scan. Physical examination showed an adipose woman (BMI 36) with abdominal pain of the right upper abdomen. The spine was scoliotic and phalanges of fingers were dysmorphic. There was no clinical evidence of encephalopathy, weight loss or jaundice. Laboratory data were unremarkable except for a strong elevation of GGT (761 U/l) and AP (2165 U/l) and mild elevation of AST (55 U/l) and ALT (78 U/l). Liver specific tumour markers were negative. Serological marker for hepatitis B was positive suggesting a previous infection (anti-Hbc positive, HBV-DNA negative, Hbs-Ag negative). CT scan showed multiple hypodense inhomogeneous lesions of the liver. The portal vein could not be visualized. However, superior mesenteric vein (SMV) and splenic vein were displayed, and SMV emptied into a high caliber splenorenal shunt. These findings led to diagnosis of CAPV Type I and FNH. A 99 m Technetium szintigraphy of the liver generated no additional findings.

A follow-up CT scan 12 months later showed an increase in size of a nodule in segment VI. First biopsy obtained from this segment elicited FNH. Histopathologically no liver fibrosis was recognized. Magnetic resonance imaging examination 3 months later showed a further size increase of this nodule. Therefore, the patient underwent a second biopsy which then revealed a HCC with histological features of a fibrolamellary carcinoma. At subsequent laparotomy, CAPV Type I was verified. The hepatic artery was wider than usual *(as thick as a pencil)*. There were no aspects of liver cirrhosis or chronic hepatitis. Multiple biopsies from the left liver lobe showed no evidence for malignancy. Therefore, a right hepatic lobectomy with resection of segment I (in size of a tangerine) was performed. Except from a HCC in segment VI, histopathological examination did not reveal any other malign tumour (pT3, N0, G2, R0 + FNH). In remnant liver tissue, FNH could be confirmed. The patient had an uneventful postoperative course and was discharged 13 days after surgery.

After 9 months, follow-up investigations showed that the liver had become enlarged in spite of missing portal venous blood supply. In the remaining organ, new suspected tumour nodules were found. There was no evidence of extrahepatic metastasis. Thus, we decided to initiate OLT for HCC. Because of absence of the portal vein, no bridging therapy like transarterial chemoembolization was possible. Two years after lobectomia, OLT was performed in piggyback technique. Due to missing portal vein, cavo-portal transposition was necessary. Histopathologically a clear cell, moderately differentiated HCC was shown (T3, N0 (0/4), G2, R0). Two months after OLT the patient was discharged in a good constitution. In follow-ups, general condition of patient and liver functioning were reported to be good. No recurrence of HCC was observed.

Discussion

In children with CAPV, liver transplantation is an established curative option. In adult patients with CAPV, literature has presented only three cases of OLT due to encephalopathy [2–4]. Independent from CAPV, FNH is a benign intrahepatic lesion [5]. Simultaneous occurrence of FNH and HCC or malignant degenerations of FNH have been reported rarely. Our case is the first to demonstrate an adult patient with CAPV showing multiple FNH with transformation into HCC.

Hepatotrophic factors - especially pancreatic hormones - transported via portal blood stream may trigger function and regeneration of hepatic cells [6]. Therefore, it has been postulated that the absence of portal hepatic perfusion result in alteration of hepatic cells [7]. Moreover, the absence of portal blood flow in CAPV might be compensated by a stronger arterial flow which then leads to the development of intrahepatic nodular lesions. Most FNHs have been found to be provided by hypertrophied arterial vessels [5]. In fact, patients with CAPV reveal fortified hepatic arterial blood flow next to absence of venous structures in the portal triad [8].

There might be a few limitations to the pathogenesis presented. Correctness of punch biopsies depends on several factors such as accurate lesion site. It seems possible that first punch biopsy led to a misinterpretation of dignity. On the other hand, multiple (five) intraoperative biopsies of suspect lesions of the left residual liver lobe were reasonably performed during hemihepatectomy and revealed benign lesions. Based on numbers and quality of biopsies, an error of assessment is improbable. Furthermore, the patient had experienced an hepatitis-B infection. There was no serological evidence of acute or chronic hepatitis-B infection. Also the absence of cirrhosis, as a subsequent alteration of chronic inflammation of the liver, challenges the possibility that a previous hepatitis-B infection led to the pathogenesis of the HCC in our patient.

The diagnosis of FNH in combination with CAPV should be carefully and continously followed-up. In case of multifocality or size increase of singular nodules, early intervention should be considered. Even under CAPV conditions, liver resection is possible, and interestingly, it is followed by sufficient hepatic regeneration. If resection is not possible, OLT is a curative option.

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Conflicts of interest

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