

Rhabdoid Cholangiocarcinoma: A Variant of Cholangiocarcinoma with Aggressive Behavior

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A rhabdoid cholangiocarcinoma is a very rare variant of sarcomatous cholangiocarcinomas. Here, we report a vimentin positive cholangiocarcinoma showing rhabdoid features in the entire tumor, with a very aggressive behavior. A 41-year-old woman was admitted to our hospital due to a huge hepatic mass. The resected liver revealed a 17×15 cm sized solid mass with extensive necrosis and an infiltrative border. On microscopic examination, the entire tumor was composed of loosely cohesive round to polygonal cells, with rhabdoid features having abundant eosinophilic glassy cytoplasm and eccentrically located vesicular nuclei. Some tumor cells contained intracytoplasmic mucin vacuoles, but definite areas of glandular differentiation or spindle cell were not found. Immunohistochemical staining showed a diffuse strong positive reaction to pan-cytokeratin and vimentin, and focal positivity for the carcinoembryonic antigen. Other immunohistochemical stainings for cytokeratin 7, cytokeratin 20, S-100 protein, HMB-45, desmin, alpha-smooth muscle actin, c-kit, CD34, alpha-fetoprotein, anti-hepatocyte antigen, chromogranin and synaptophysin were all negative. After two months, the patient developed a local recurrence along the resection margin, and multiple hematogenous metastases to the lung and liver were seen on the follow-up CT scan.

Key Words: Cholangiocarcinoma, rhabdoid tumor, carcinosarcoma, vimentin

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INTRODUCTION

A sarcomatous cholangiocarcinoma is rare and is reported to have a more aggressive behavior than the classic type.^{1,2} Rhabdoid differentiation is a very rare variant of sarcomatous carcinoma, and there have been several case reports of sarcomatous carcinomas with rhabdoid features in the gastrointestinal tract.³⁻⁶ Their prognosis was poor due to early metastasis. Concerning the neoplasm of hepatobiliary system, there is only one case report of cholangiocarcinoma with rhabdoid feature in English literatures.⁷ Here we present a case of a vimentin positive rhabdoid cholangiocarcinoma, where the entire tumor was composed of rhabdoid cells, with a very aggressive behavior.

CASE REPORT

A 41-year-old woman was admitted to our hospital with a palpable epigastric mass of 3 months duration. A magnetic resonance imaging study revealed a huge hepatic mass arising from the lateral segment of the left lobe. The mass was composed of heterogeneous components, suggestive of a hemorrhage and necrosis (Fig. 1). The serum alpha-fetoprotein and carcinoembryonic antigen levels were within normal limits, and all serum markers for hepatitis B virus and hepatitis C virus were negative. A left lobectomy of the liver was performed.

On gross examination, the mass was huge (17×15 cm), with extensive necrosis and an infiltrative border. The viable tumor, found only in the

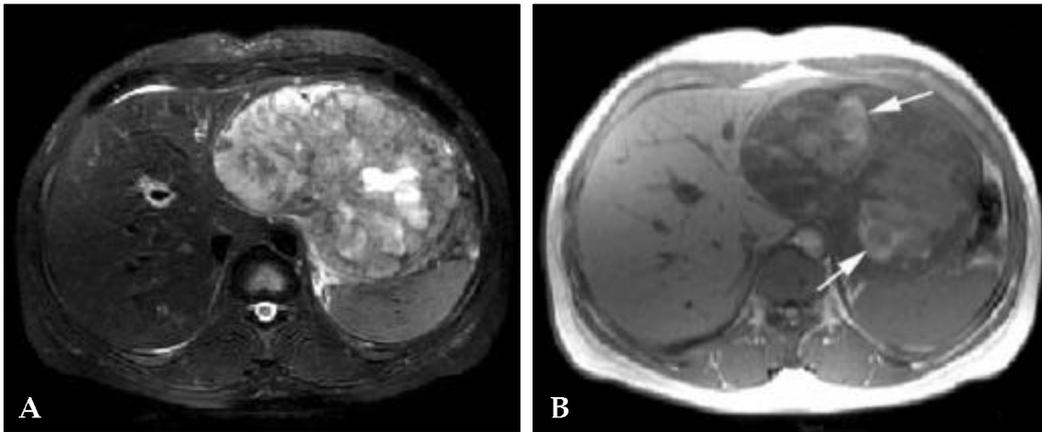


Fig. 1. Preoperative MR images and a hepatic arteriography. Axial T2-weighted fast spin-echo (A), and T1-weighted spoiled gradient echo (B) images show a largely lobulated mass of heterogeneous signal intensity in the lateral segment of the left lobe of the liver.

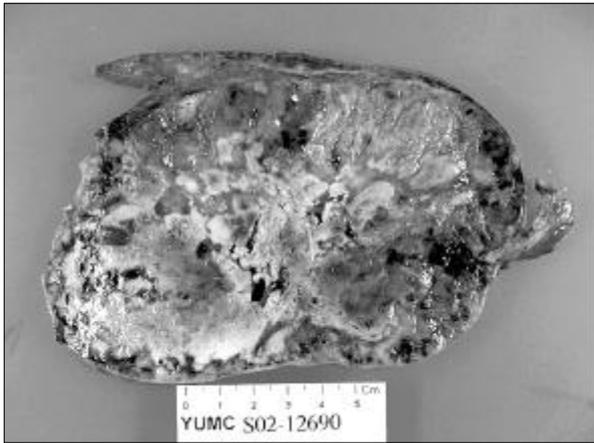


Fig. 2. Gross feature of rhabdoid cholangiocarcinoma showing a 17 × 15 cm sized huge mass with extensive necrosis. The viable tumor was found only in the periphery of the mass.

peripheral portion of the mass, was reddish yellow to tan, and hemorrhagic (Fig. 2). On microscopic examination, the entire tumor was composed of loosely cohesive, round to polygonal cells with abundant eosinophilic glassy cytoplasm. The nuclei were vesicular and eccentrically located. Some tumor cells contained dot like intracytoplasmic mucin vacuoles, which were positive to mucicarmine stain (Fig 3A, 3B). There was frequent vascular permeation of the tumor. The tumor cells showed a strong positive reaction to both pan-cytokeratin (1 : 300, DAKO, Glostrup, Denmark) and vimentin (1 : 50, DAKO) from the immunohistochemistry (Fig. 3C, 3D). Some tumor

cells were also positive for carcinoembryonic antigen (1 : 50, DAKO). Other immunohistochemical stainings for cytokeratin 7 (1 : 50, DAKO), cytokeratin 20, S-100 protein, HMB-45, desmin, alpha-smooth muscle actin, c-kit, CD34, alpha-fetoprotein, anti-hepatocyte antigen, synaptophysin (DAKO) and chromogranin (Shandon, Pittsburgh, PA, USA) were all negative. The typical area of the adenocarcinoma or spindle cells was not found in the tumor. The possibility of metastasis from other organs was clinically ruled out by a gastrointestinal endoscopy and the radiological studies. According to these findings, we diagnosed the tumor as a rhabdoid cholangiocarcinoma. The differential diagnosis included a primary or metastatic malignant rhabdoid tumor, however the mucin production of the tumor cells was not compatible with this entity.

After two months, the patient developed a local recurrence along the resection margin, with multiple hematogenous lung and hepatic metastasis seen on the follow-up CT scan (Fig. 4).

DISCUSSION

An intrahepatic cholangiocarcinoma, a primary adenocarcinoma of the liver, originates from the intrahepatic ducts, and is the second most common, next to hepatocellular carcinomas, primary liver cancer in adults. Worldwide, they account for 15% of liver cancers, and the incidences have

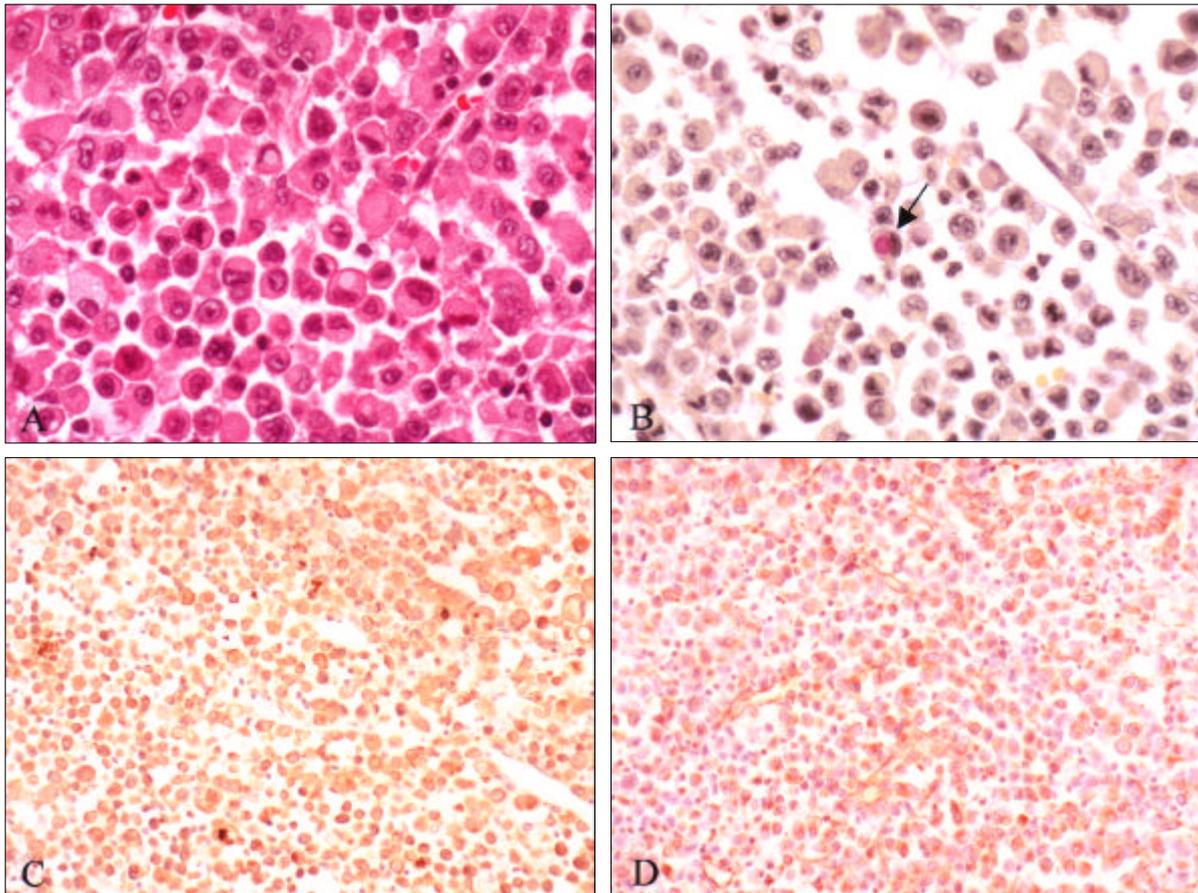


Fig. 3. Microscopic feature of rhabdoid cholangiocarcinoma. The entire tumor was composed of loosely cohesive round to oval cells with abundant eosinophilic glassy cytoplasm and eccentric nuclei (A). Some of the tumor cells contained intracytoplasmic mucin which showed positive reaction to mucicarmine stain (arrow) (B). The tumor cells showed positive reaction to both cytokeratin (C) and vimentin (D) immunohistochemical staining. (A, B; $\times 400$, C, D; $\times 200$).

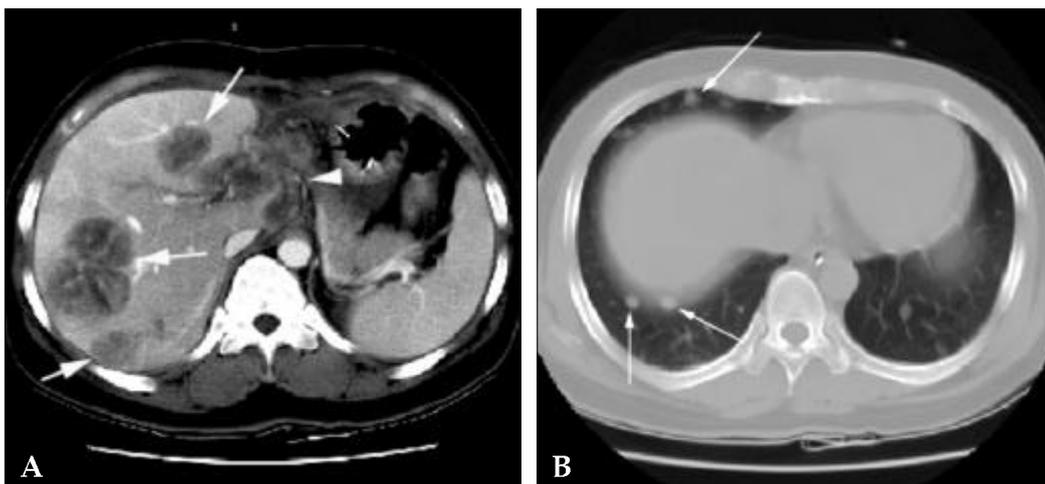


Fig. 4. Postoperative CT scan obtained two months after the surgery. Postcontrast CT scan obtained at the level of liver shows multiple hepatic metastases (arrows) and local recurrence along the resection margin (arrow head) (A). CT scan with lung window setting at the level of the liver dome shows multiple hematogenous metastases (arrows) (B).

increased in recent years.⁸ Sarcomatous hepatocellular carcinomas account for about 1.8% of all hepatocellular carcinomas, and sarcomatous cholangiocarcinomas are even rarer.⁹ The sarcomatous area of a cholangiocarcinoma is usually composed of atypical spindle cells, arranged in sheets or bundles, with variable numbers of multinucleated, bizarre giant cells often intermixed with the spindle cells.¹ These spindle cells show a positive reaction to cytokeratin, epithelial membrane antigen and vimentin with the immunohistochemistry.²

In the present case, the morphological characteristics were loosely arranged tumor cells containing abundant eosinophilic glassy cytoplasm, referred to as 'rhabdoid' features. However, the occasional mucin production of the tumor cells proved that this tumor was, basically, a poorly differentiated cholangiocarcinoma. The tumor cells expressed both cytokeratin and vimentin, so the tumor was considered a rhabdoid cholangiocarcinoma, possibly even a variant of a sarcomatous cholangiocarcinoma. Honda et al. reported a case of a cholangiocarcinoma showing similar histological and immunohistochemical characteristics as the present case,⁷ where the tumor was composed of two distinct components, a tubular adenocarcinoma and a sarcomatoid carcinoma composed of loosely arranged rhabdoid cells. The sarcomatous area showed exactly the same morphological characteristics as our case, although, after thorough sampling, the well formed tubular structure of an adenocarcinoma was not found in our case.

The prognosis of sarcomatous cholangiocarcinomas has generally been reported to be poorer than the classic type.¹ The case of a cholangiocarcinoma with a rhabdoid transformation has been reported to have a more aggressive behavior, with widespread metastasis to many organs.⁷ Our case also revealed a very aggressive behavior, as it showed a local recurrence along the resection margin, with multiple hematogenous lung and hepatic metastases two months after the operation. Adenocarcinomas with rhabdoid differentiation and vimentin positivity, have been reported in other organs, such as the stomach (most common), small intestines and the pancreas³⁻⁶ with a poorer prognosis recognized in most of these cases. The co-expression of cytokeratin and vimentin was presumed to be due to the dedifferen-

tiation of the tumor, and significant correlation has been shown between the expression of vimentin and a poor prognosis, in other tumor such as breast cancer.¹⁰

In conclusion, a rhabdoid cholangiocarcinoma is considered to be a very rare variant of a sarcomatous cholangiocarcinoma with an aggressive behavior.

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