

## CT Findings of Ciliated Hepatic Foregut Cyst Mimicking Metastasis: A Case Report<sup>1</sup>

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Ciliated hepatic foregut cyst (CHFC) is a rare benign lesion consisting of ciliated pseudostratified columnar epithelium, loose subepithelial connective tissue, a smooth muscle layer, and an outer fibrous capsule. We encountered a patient with retroperitoneal and posterior mediastinal neurilemmoma and additional CHFC mimicking metastasis. Abdominal CT examination demonstrated that the posterior mediastinal and retroperitoneal lesions were lobulated, well-defined tumors with a neural foraminal extension that were pathologically confirmed as neurilemmomas. Unenhanced CT indicated that the additional lesion was a slightly hypodense mass relative to surrounding parenchyma at the medial segment of the left lobe of the liver, and after the IV administration of contrast material, the lesion did not show enhancement.

**Index words :** Liver, cysts

Liver neoplasms, diagnosis

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Ciliated hepatic foregut cyst (CHFC) is a rare cystic lesion of the liver (1 - 7). It is solitary and monocystic, and unless infected or large in size, is not usually symptomatic. In the liver, it is important to distinguish a benign cyst of this kind from hypovascular solid tumor. We encountered a patient with CHFC mimicking metastasis, in whom had posterior mediastinal and retroperitoneal masses, were also present.

### Case Report

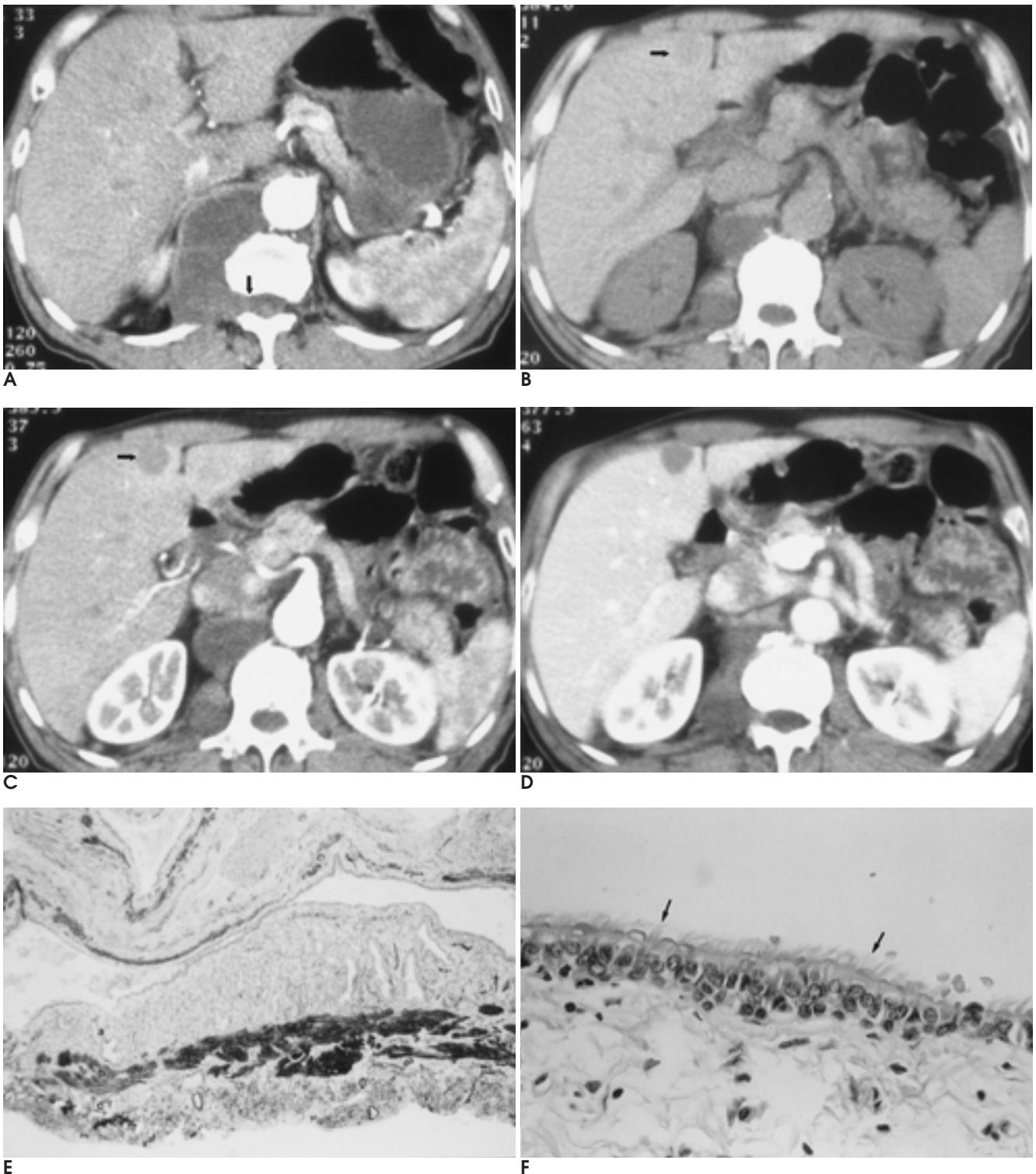
A 69-year-old man was presented with a one-month history of abdominal discomfort. A retroperitoneal mass had been detected by on ultrasonography at another

hospital, from where he was transferred to our hospital for further evaluation. The results of routine laboratory tests, including blood chemistry, urinalysis, and liver function was normal.

Computed tomography (CT) examination of the abdomen revealed large posterior mediastinal and retroperitoneal masses, and in the course of examination, a single hepatic mass lesion was discovered. The posterior mediastinal lesion was showed to be a lobulated, well-defined tumor with neural foraminal extension at the right of the T11 - L1 level, and measured 8 × 6 × 4 cm. The retroperitoneal mass was revealed as a smoothly margined tumor at the right of the L3 - 4 level, and measured 4 × 4 × 3 cm. An additional lesion was located at the right of the L1 - 2 level, and measured 4 × 3 × 2 cm. The paravertebral mass with neural foraminal extension, interiors of these tumors were homogeneous and showed no enhancement (Fig. 1A). In the liver, the additional lesion presented at the medial segment of its left lobe was revealed as a well-demarcated mass measuring 2.5 × 2.5 cm. Unenhanced CT showed a slightly

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**Fig. 1. A.** On enhanced CT scan, the posterior mediastinal mass show lobulated, well-defined tumors with neural foraminal extension (arrow). The final diagnosis at histopathologic study is neurilemmoma.  
**B.** Unenhanced CT scan shows a slightly hypodense mass relative to surrounding liver parenchyma (arrow). On contrast-enhanced arterial phase (**C**) and portal phase (**D**) CT scan, the lesion shows a well-defined hypodense mass in the medial segment (arrow). The lesion is not enhanced with administration of contrast material.  
**E.** Actin immunoreactivity in ciliated hepatic cyst. The smooth muscle is positive for actin (b). The cyst wall consists of the following four layers: ciliated pseudostratified epithelium, subepithelial loose connective tissue (a), smooth muscle layer (b), and outer fibrous capsule (c).  
**F.** Cyst lined with ciliated pseudostratified epithelium (arrows). Deep in the epithelium is layer of attenuated loose connective tissue (hematoxylin-eosin,  $\times 250$ )

hypodense mass relative to surrounding liver parenchyma (Fig. 1B), and with an attenuation value of 65 HU. Contrast-enhanced arterial phase CT scanning indicated that the lesion was not enhanced, and there was hypoattenuation relative to slightly enhanced surrounding liver parenchyma (Fig. 1C). Portal phase CT scanning also demonstrated that the lesion was not enhanced (Fig. 1D), and is appeared to be a hypovascular metastatic nodule arising from a malignant neurogenic tumor.

The posterior mediastinal and retroperitoneal masses were surgically resected, and because the possibility of hypovascular metastasis could not be excluded, wedge resection of the hepatic lesion was also performed. For the posterior mediastinal and retroperitoneal masses, the histopathologic diagnosis was neurilemmoma. A gross specimen of the hepatic lesion revealed the presence of a unilocular cyst enclosed by a thin capsule, and containing a mucinous fluid. The mass had no solid component, and the histopathologic finding was compatible with a ciliated foregut cyst (Figs. 1E and F).

## Discussion

Wheeler and Edmondson (1) first used the term ciliated hepatic foregut cyst (CHFC) to describe a benign liver lesion that apparently arises from the embryonic foregut. The cyst is generally solitary and unilocular and consists of four layers: ciliated pseudostratified columnar epithelium with admixed mucous cells, loose subepithelial connective tissue, one to three smooth muscle layers, and an outer fibrous capsule. Ciliated cysts of foregut origin arise in relation to the esophagus and trachio bronchial tree and are designated as esophageal cysts and bronchial cysts, respectively. CHFC is considered to occur as an anomalous detached primordium of the hepatic diverticulum or an independent bud from the nearby enteric foregut (1).

CHFC has been found in patients aged about 50, and has been, primarily, an incidental findings (2). In all reported cases involving diagnostic imaging, CHFCs were found in the subcapsular region of the medial segment of the left lobe (3 - 7), though the reasons for this are not clear.

Ultrasonography performed in prior cases revealed anechoic and hypoechoic small lesions similar to simple hepatic cysts (3, 4), and CT demonstrated variable attenuation patterns. The unenhanced CT findings of reported cases have shown that some CHFCs showed iso- to

hyperattenuation compared to surrounding liver parenchyma, and this is because the fluid in the cyst is mucinous and contains calcium (4 - 6). After bolus injection of contrast medium, the lesion failed to show enhancement (3 - 6). Our case showed subtle hypoattenuation compared with surrounding liver parenchyma on unenhanced CT, and there was no enhancement after the injection of contrast medium. On both unenhanced and enhanced CT, attenuation was higher than that of simple hepatic cyst, and the differential diagnosis therefore included hypovascular solid tumors as well as cystic lesions. Particularly, if a lesion is shown by CT to coexist with another masses, hepatic hypovascular metastasis should be considered. The CHFCs were hyperintense on T2-weighted images, but showed variable signal intensity on T1-weighted images (3 - 5). The variable signal intensity seen on T1-weighted images is presumably due to differences in protein concentration.

CHFCs are not true neoplasms, and surgical resection should be avoided. When a lesion found in the subcapsular region of the medial segment of the left lobe has a well-delineated round shape, is revealed as a cystic mass on ultrasonography and shows mild hypo- and hyperattenuation compared with surrounding liver parenchyma on unenhanced CT, CHFC should be considered. Surgical resection of this benign hepatic cyst is unnecessary unless it becomes infected; preoperative diagnosis, aspiration and/or biopsy is therefore recommended.

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