

Primary hepatic schwannoma: imaging and histological findings

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Schwannoma is a rare tumour in the liver. It is likely to arise from the hepatobiliary nerves among the hepatic plexus in the liver hilum as well as interlobular connective tissues and hepatic arteries. To the best of our knowledge, no prior publications have reported cases in Hong Kong.

We report the case of a 64-year-old man with a history of nasopharyngeal carcinoma and colon carcinoma and a new liver lesion detected on follow-up imaging for surveillance in 2018 following detection of a slightly elevated serum

carcinoembryonic antigen level (4.7 µg/L). Alpha fetoprotein level was within the normal range (3.9 µg/L). Liver function tests were normal and he was asymptomatic with no history of neurofibromatosis.

Triphasic contrast computed tomography (CT) of the liver revealed a 5.2-cm ovoid hypodense lesion with heterogeneous enhancement in the caudate lobe of the liver (Fig 1). No washout of contrast was evident in the portal venous or delayed phases. Fluorodeoxyglucose-18 positron

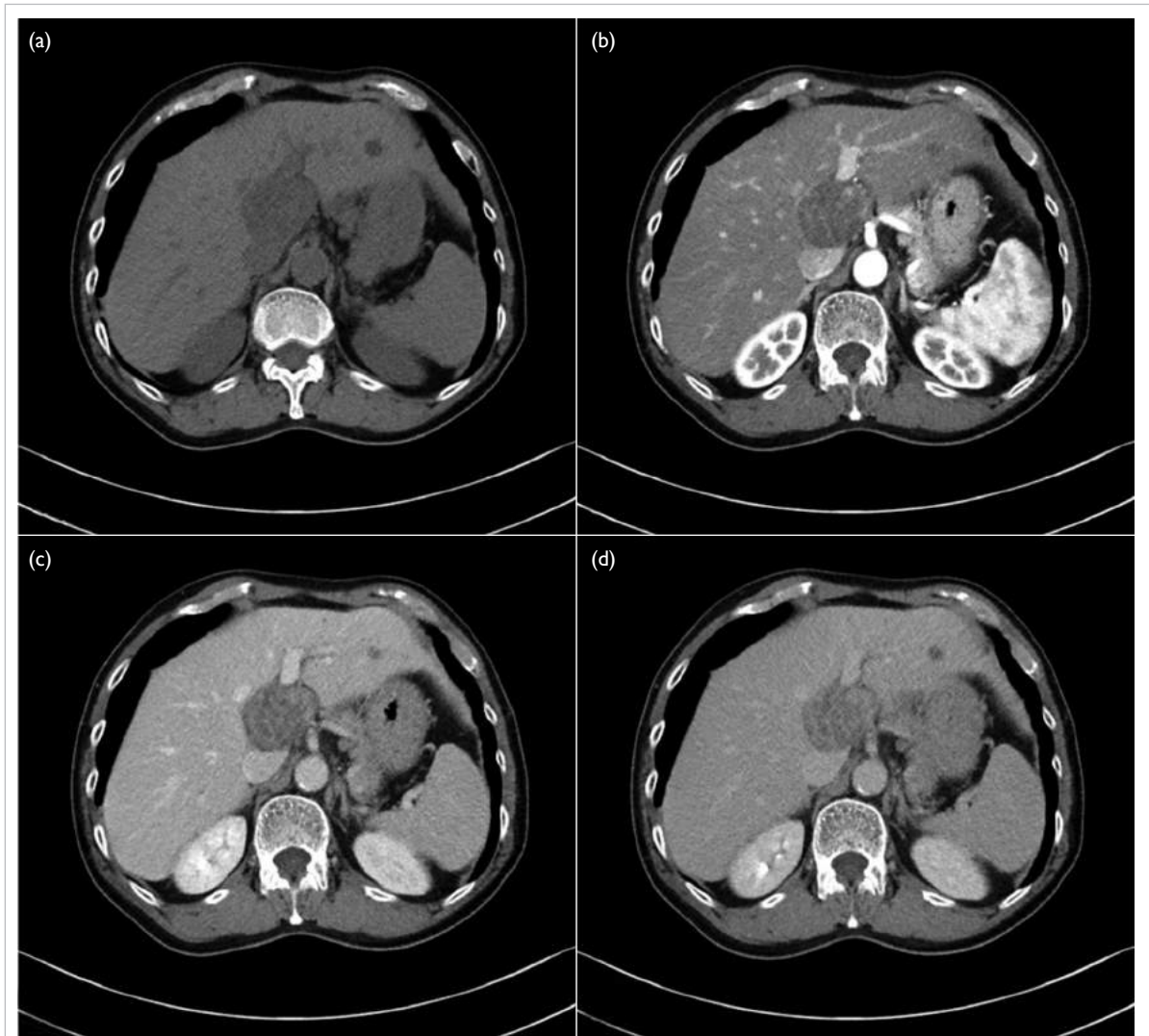


FIG 1. Triphasic computed tomography scans in (a) pre-contrast, (b) arterial, (c) portal venous, and (d) delayed phases, showing a well-defined, ovoid hypodense lesion with heterogeneous enhancement that persists in portal venous and delayed phases in the caudate lobe of the liver

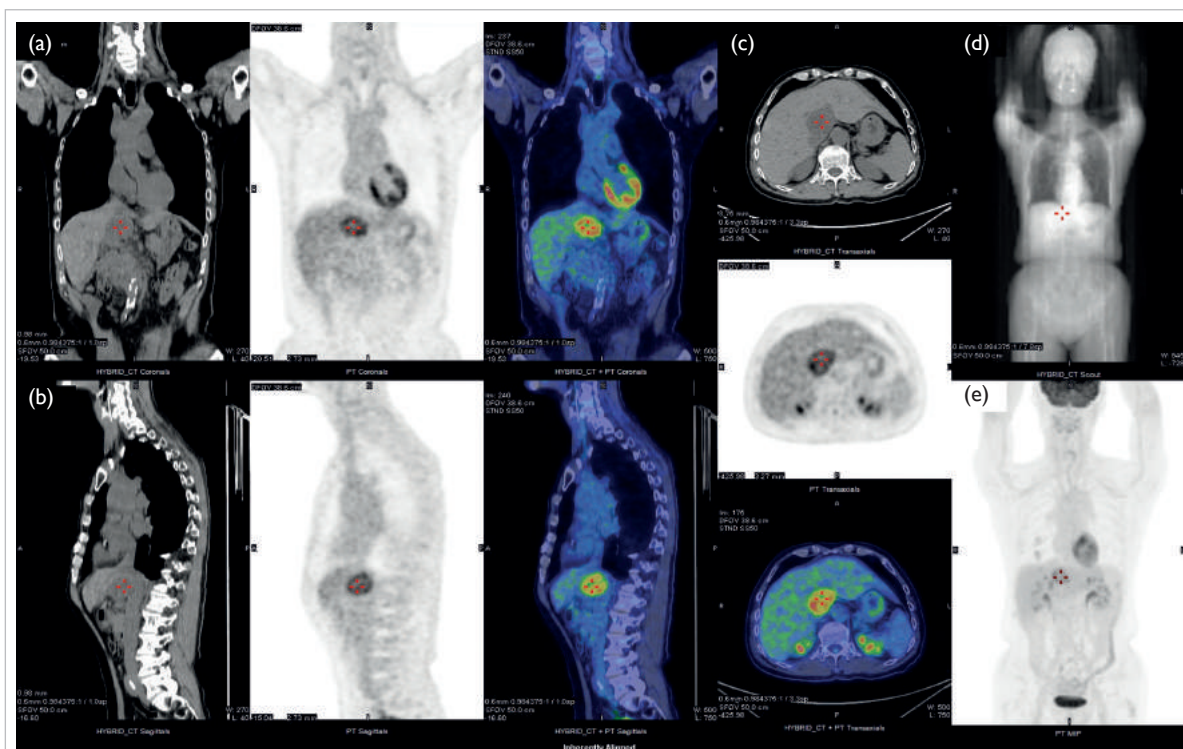


FIG 2. Positron emission tomography-computed tomography scan in (a) coronal, (b) sagittal and (c) axial planes together with the (d) scout and (e) maximum intensity projection images, showing a moderately hypermetabolic lesion at the caudate lobe of the liver (red crosses)

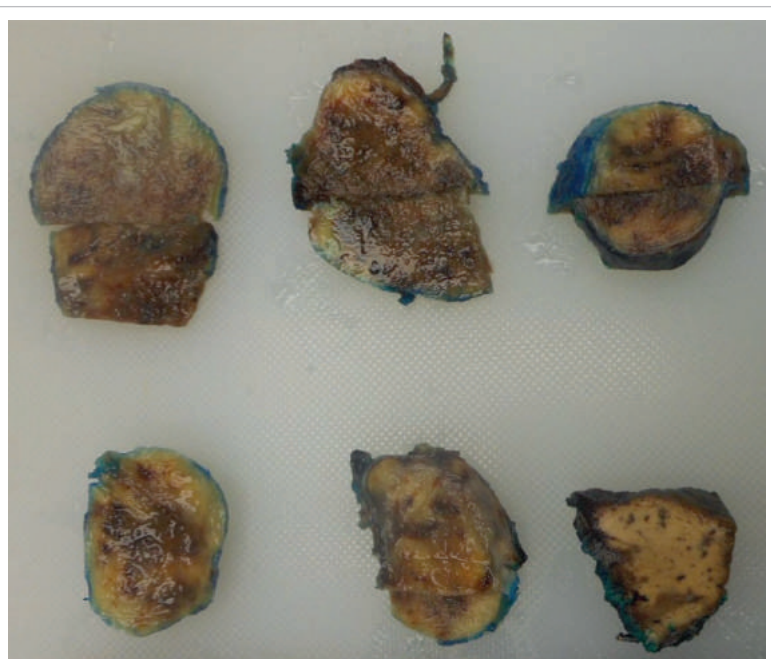


FIG 3. Gross specimen of hepatic resection with a well-circumscribed tumour mass and light tan colour cut surface

emission tomography-CT showed a moderately hypermetabolic lesion at the caudate lobe with a maximum standardised uptake value of 5.8 (Fig 2).

Surgical resection of the lesion was performed (Fig 3). Pathology showed a schwannoma and degenerative changes. Histological examination revealed an encapsulated tumour consisting of highly ordered Antoni type A and B areas (Fig 4). Immunohistochemical analysis showed the tumour cells to be diffusely positive for S100, consistent with neural differentiation (Fig 4). HerPar1, a mitochondrial antigen of hepatocytes, was negative. The CD34, a cell surface glycoprotein that is positive in gastrointestinal stromal tumour, was also negative.

Schwannoma is most commonly found in the limbs and the head and neck region. A fifth of cases shows association with neurofibromatosis type 1. The mediastinum and retroperitoneum are other possible sites. It is uncommon in the gastrointestinal tract and extremely rare in the liver.¹ It was first reported in 1978 by Pereira et al.² A literature search through PubMed and MEDLINE revealed 32 reported cases. No cases have been published in Hong Kong.

The origin of hepatic schwannoma is the hepatobiliary nerves among the hepatic plexus in the liver hilum as well as interlobular connective tissues and the hepatic arteries.^{1,3} They are usually well-encapsulated and grow very slowly, usually smaller than 5 cm at the time of diagnosis. Larger schwannomas may undergo secondary degeneration with consequent pseudocystic regression,

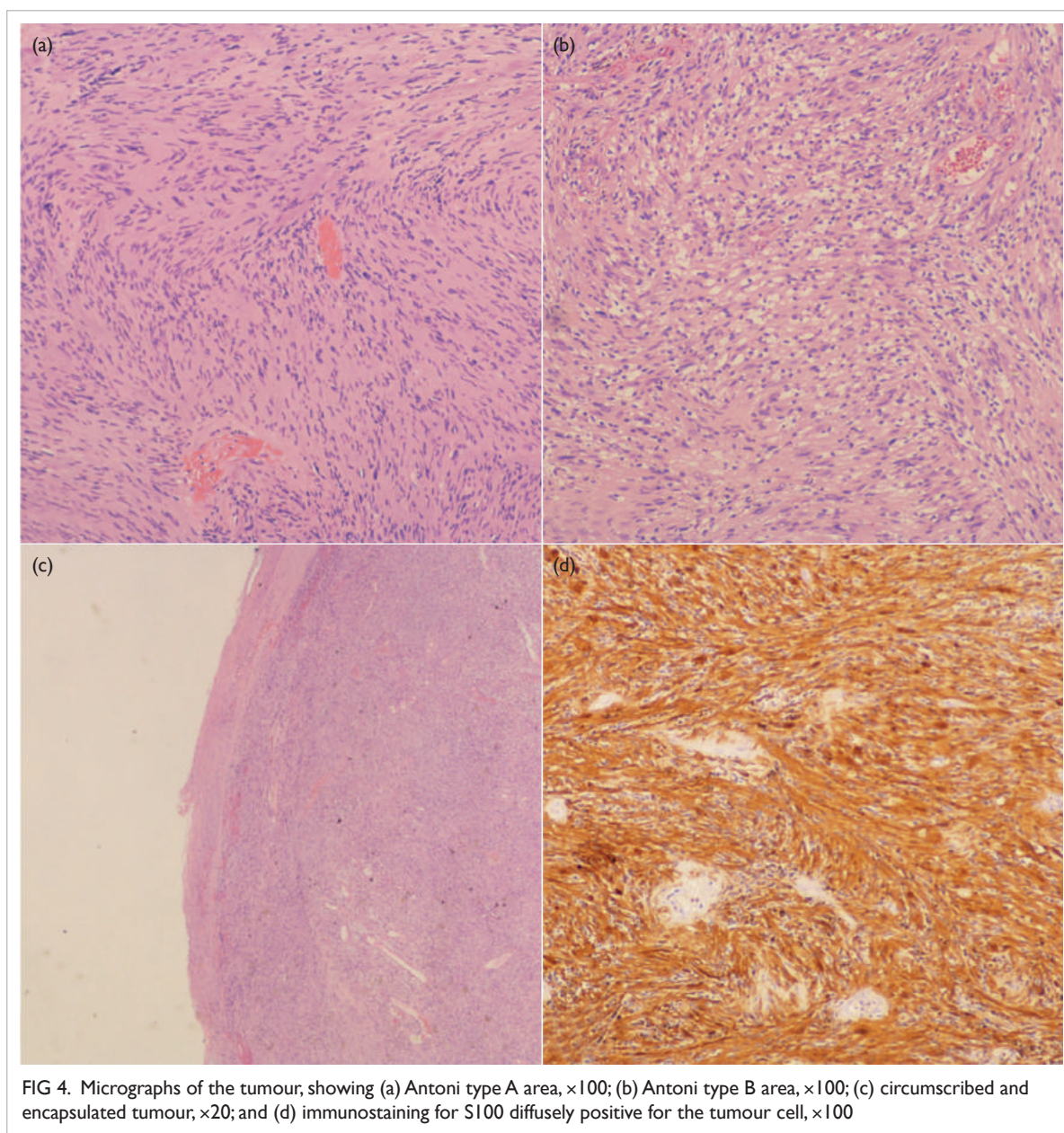


FIG 4. Micrographs of the tumour, showing (a) Antoni type A area, $\times 100$; (b) Antoni type B area, $\times 100$; (c) circumscribed and encapsulated tumour, $\times 20$; and (d) immunostaining for S100 diffusely positive for the tumour cell, $\times 100$

haemorrhage, and calcification. Malignant transformation is very rare.³

Pathologically, a schwannoma is an encapsulated tumour that arises within the nerve sheaths. It consists of a highly ordered cellular component (Antoni type A area) characterised by spindle cells with twisted nuclei arranged in short bundles, and a hypocellular area in a loose myxoid stroma (Antoni type B area) that comprises a loose meshwork of gelatinous and microcystic tissue.⁴

On imaging, hepatic schwannoma is usually well circumscribed with various signal characteristics, depending on the distribution of Antoni A and Antoni B areas.¹ It is commonly of low density with heterogeneous enhancement on

CT, hypointense on T1-weighted, and hyperintense on T2-weighted magnetic resonance imaging.⁵ There have also been reports of malignant tumours but there are no distinct radiological features that differentiate them from benign tumours.³ A hepatic schwannoma may be fluorodeoxyglucose-avid depending on inflammatory activity and cellularity. Fluorodeoxyglucose-18 positron emission tomography–CT alone may enable differentiation of a schwannoma from malignant lesions of the liver.¹

Hepatic schwannoma is an extremely rare tumour and preoperative diagnosis with imaging is challenging. Biopsy or surgical resection is usually required for definitive diagnosis.

Author contributions

Concept or design: All authors.

Acquisition of data: HL Tsui and CH Lau.

Analysis or interpretation of data: HL Tsui, SM Yu, and CH Lau.

Drafting of the manuscript: HL Tsui, SM Yu, and CH Lau.

Critical revision of the manuscript for important intellectual content: All authors.

All authors had full access to the data, contributed to the study, approved the final version for publication, and take responsibility for its accuracy and integrity.

Conflicts of interest

All authors have disclosed no conflicts of interest.

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Ethics approval

This study is approved by the cluster Research Ethics Committee (Ref KC/KE-19-0247/ER-3). Written patient consent was also obtained.

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