

Ultrasonographic Manifestations of Primary Hepatic Squamous Cell Carcinoma: A Case Report

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DISCLOSURES

The authors declare no conflict of interest.

ETHICAL STATEMENT

This case study was conducted in accordance with the principles of the Declaration of Helsinki. It was approved by the Ethics Committee of the Second Affiliated Hospital of Lanzhou University, and written informed consent was obtained from the patient for the publication of this case report and related images.

ABSTRACT

Primary squamous cell carcinoma (PHSCC) of the liver is a rare type of cancer. Most patients are elderly men. This disease is difficult to diagnose, highly invasive, has a poor prognosis, and there are extremely few reports in domestic and foreign literatures, which are basically mainly case reports. This article reports a patient with primary squamous cell carcinoma of the liver and conducts a relevant literature review to improve clinicians' diagnosis of primary squamous cell carcinoma of the liver. In July 2024, our hospital admitted a 58-year-old female patient. Abdominal CT tomography considered cholangiocarcinoma of the liver; contrast-enhanced liver ultrasound suggested a malignant enhancement pattern, with a greater possibility of hepatocellular carcinoma. Later, after a puncture biopsy of the space-occupying lesion in the liver under ultrasound guidance, the analysis of the biopsy sample indicated squamous cell carcinoma. Therefore, the doctors in our hospital carried out imaging examinations to find the primary lesion. The results showed that the space-occupying lesion was primary squamous cell carcinoma of the liver, accompanied by metastasis to the hilar and abdominal lymph nodes. The patient was treated with Sintilimab + Bevacizumab and was discharged from the hospital after the condition stabilized.

CASE REPORT

INTRODUCTION

Primary hepatic squamous cell carcinoma (PHSCC) is a sporadic primary malignant tumor of the liver. Only dozens of cases have been reported, and its imaging features and laboratory examination indicators lack specificity [1]. Most squamous cell carcinomas of the liver are essentially metastases from primary sites such as the lung, thyroid gland, or gastrointestinal tract. A definitive diagnosis requires pathological examination and the exclusion of metastatic tumors [2,3]. At present, the etiology has not been fully clarified. According to previous studies, it is speculated that the presence of liver cysts and stones may be related to primary hepatic squamous cell carcinoma (PHSCC). This is because chronic inflammation caused by liver cyst infection and the stimulation of the bile ducts by stones may induce squamous metaplasia and subsequent transformation

[2,4]. Its clinical manifestations are also lacking in specificity. Common symptoms include right upper abdominal pain, weight loss, jaundice, and abdominal mass. Most patients present with abdominal pain as the primary clinical manifestation. Because of the rarity of primary hepatic squamous cell carcinoma (PHSCC), there is currently no standardized treatment method. Surgical intervention, interventional therapy, chemotherapy, and immunotherapy can be considered according to the patient's overall condition and tumor characteristics [5,6]; in addition, when conventional methods are not feasible, genetic testing may help determine the suitability of immunotherapy as an alternative to radical treatment [1]. Most previous reports lack systematic descriptions of ultrasonic features (such as tumor margin regularity and blood flow patterns), which may help distinguish PHSCC from hepatocellular carcinoma (HCC).

Currently, the literature is dominated by case reports, and there is a hope to promote multi-center research on rare diseases.

CASE REPORT

Patient: Female, 58 years old. She experienced intermittent upper abdominal pain without obvious triggers for more than one month before admission. She then went to the Second Hospital of Lanzhou University for medical treatment. She had no history of infectious hepatitis and had a history of chronic cholecystitis in the past. When she was admitted to the hospital, the pain intensified. Physical examination showed that the abdomen was flat, and there was no varicose vein on the abdominal wall; there was no tenderness, rebound tenderness, or muscular tension in the whole abdomen; no abnormal mass was palpable in the abdomen, the hepatic dullness boundary was normal, and the shifting dullness was negative. Laboratory findings included: Liver function tests: ALT 27 U/L, AST 30 U/L, TBIL 18.6 $\mu\text{mol/L}$, DBIL 9.0 $\mu\text{mol/L}$, IBIL 9.0 $\mu\text{mol/L}$, albumin 33.2 g/L, ALP 326 U/L, GGT 118 U/L. Tumor markers: AFP 1.63 ng/mL, PIVKA-II 22.23 mAU/mL, CEA 3.67 ng/mL, CA-125 12.9 U/mL, CA-199 102 U/mL. Hematology: WBC $12.65 \times 10^9/\text{L}$, neutrophils $10.37 \times 10^9/\text{L}$, lymphocyte ratio 9.9%.

Contrast-enhanced abdominal CT:

A heterogeneous density shadow with noticeable uneven enhancement in the right lobe of the liver, with a size of approximately $7.7 \text{ cm} \times 7.9 \text{ cm} \times 5.8 \text{ cm}$. Patchy low-enhancement areas were visible inside. The diagnosis was considered to be intrahepatic cholangiocarcinoma (ICC) with hilar and abdominal lymph node metastases (Figure 1A).

Two-dimensional ultrasound

An inhomogeneous hyperechoic mass of approximately $8.5 \times 6.2 \text{ cm}$ was observed in the right lobe of the liver, and punctate blood flow signals could be detected within it (Figure 1B).

Contrast-enhanced ultrasound

During the arterial phase of contrast-enhanced ultrasound at 19 seconds, there was uneven ring-shaped hyper-enhancement, and the enhancement was higher than that of the surrounding liver tissue. In the portal venous phase, the contrast agent within the lesion washed out and showed hypo-enhancement, suggesting a higher likelihood of hepatocellular carcinoma (HCC). A puncture biopsy was recommended (Figure 1C). Subsequently, a percutaneous needle biopsy of the liver tumor was performed under ultrasound guidance. The pathological results, morphological features, and immunohistochemical findings were consistent with squamous cell carcinoma.

The immunohistochemical results

Positive: CK5/6 (diffuse+), P40 (+), P63 (+), CK19 (focal+), CK8/18 (focal+). Negative: Hepatocyte, Glypican-3, AFP, Synaptophysin (Syn), TIF-1. Proliferation index: Ki67 (50%+) (Figure 1D). After the patient was admitted to the

hospital, CT scans of the neck, chest, whole abdomen, and pelvis were performed, and medical history collection and physical examination were carried out. No primary tumor foci were found in other parts. The final diagnosis of this case was primary squamous cell carcinoma of the liver. Considering the advanced stage of the malignant tumor, the patient's physical condition, and the wishes of the patient and family members, treatment with Sintilimab + Bevacizumab was selected, and the patient was discharged.

DISCUSSION

Primary squamous cell carcinoma of the liver is sporadic, and there has been no clear report on its incidence rate. Its exact pathogenesis remains unclear, and there is a lack of corresponding treatment guidelines. Most squamous cell carcinomas of the liver are essentially metastases from primary sites such as the lung, thyroid gland, or gastrointestinal tract [2]. The etiology has not been fully clarified, but literature reports suggest that its occurrence may be related to hepatic teratomas, congenital liver cysts, long-term inflammation, or metaplasia of biliary epithelial cells [7]. Previous studies have shown that the clinical manifestations of primary hepatic squamous cell carcinoma usually lack specificity. Patients often seek medical treatment due to a palpable and tender mass in the right upper abdomen [2]. Physical examination may reveal a palpable abdominal mass and tenderness in the right upper abdomen, often accompanied by fever. In this case, the patient only presented with intermittent upper abdominal pain without apparent causes. Primary hepatic squamous cell carcinoma usually lacks specific laboratory examination indicators.

In this case, imaging examinations showed that on two-dimensional ultrasound, a hyperechoic mass with inhomogeneous internal echoes was visible in the right lobe of the liver, and punctate blood flow signals could be detected within it. Contrast-enhanced ultrasound revealed the following characteristics: in the arterial phase, the periphery of the lesion showed irregular ring-shaped hyper-enhancement; in the portal venous phase and the delayed phase, it showed hypo-enhancement, and there might be an irregular non-enhanced area in the center of the lesion. At the same time, the serum CA19 - 9 levels were also elevated. These manifestations were similar to the contrast-enhanced ultrasound patterns Yang Ke and Song et al. reported. However, further case accumulation is needed to verify the consistency of its contrast-enhanced ultrasound characteristics, which still requires further research and summary [4].

Just like all malignant tumors, the diagnosis of primary squamous cell carcinoma of the liver also depends on pathological examination. Clinically, specimens can be obtained through surgical operations or liver puncture guided by ultrasound or CT. Due to the extremely low incidence of primary hepatic squamous cell carcinoma, there is still no consensus on its treatment regimen. Reported treatment methods include surgical resection, systemic chemotherapy, radiotherapy, hepatic arterial chemoembolization (HACE),

and combinations of these therapies. In this case, the patient received systemic chemotherapy and was discharged after the condition stabilized [4].

In conclusion, as imaging professionals, we should continuously summarize in clinical practice. We need to be proficient in the imaging features of common diseases and be good at summarizing the imaging features of rare diseases. It can assist clinicians in making earlier diagnoses, designing treatment plans, and prolonging the effective survival period of patients.

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FIGURES

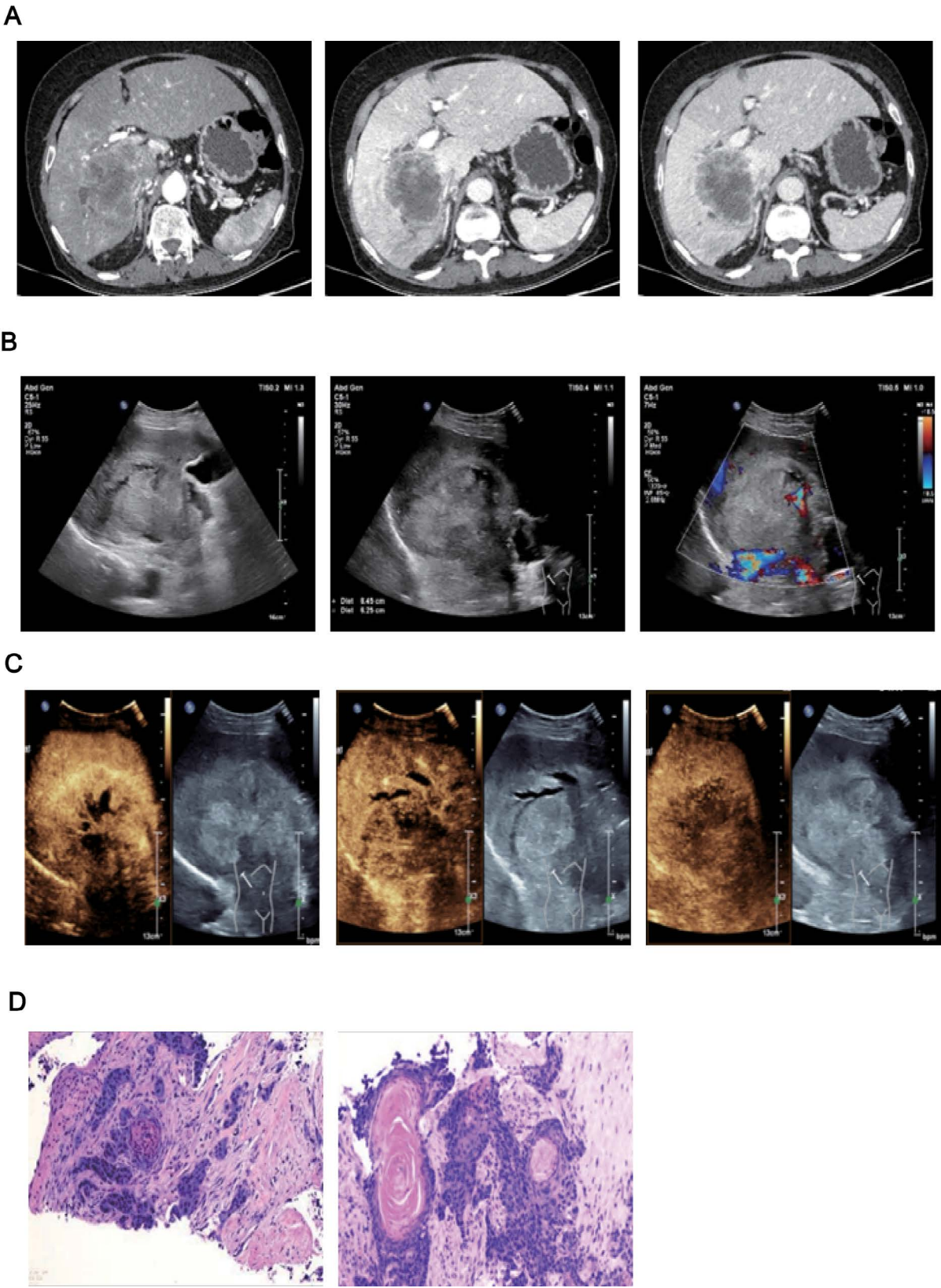


Figure 1: Contrast-enhanced abdominal CT (A): Two-dimensional ultrasound (B): Contrast-enhanced ultrasound (C): The immunohistochemical results (D)

KEYWORDS

Primary squamous cell carcinoma of the liver; Contrast-enhanced ultrasound

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