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A case of pseudoglandular hepatocellular carcinoma: The usefulness of a multimodal approach

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ABSTRACT

Hepatocellular carcinoma (HCC) mainly composed of the pseudoglandular pattern is very rare. We present a case of pseudoglandular HCC that was hyperechoic on ultrasound, with strongly high signal intensity on T2-weighted imaging and weak arterial contrast enhancement. Computed tomography hepatic arteriography showed corona enhancement. Radiologists should keep in mind this combination of multimodal radiological findings for pseudoglandular HCC.

Introduction

Hepatocellular carcinomas (HCCs) are classified into trabecular, pseudoglandular, compact, and scirrhous types [1]. Among them, HCC mainly composed of the pseudoglandular pattern is very rare [2,3]. We describe herein the radiological findings from a pseudoglandular-type case of HCC.

Case report

A 72-year-old man was referred to our hospital for further examination of the diagnosis of early gastric cancer. During preoperative workup, a hepatic mass was incidentally identified. Laboratory data were normal: white blood cells, 3840/μL (normal 3300-8600); red blood cells, 433 × 10^4/μL (normal

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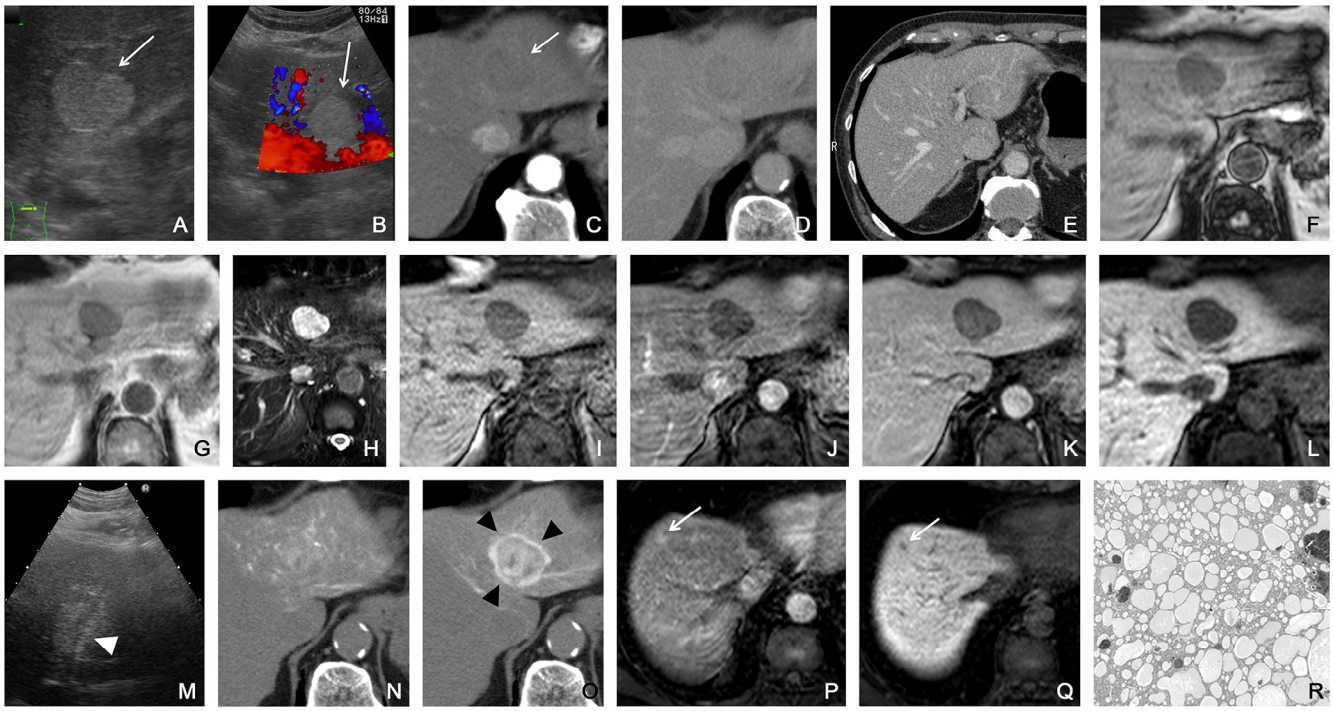

Fig. 1 – The mass (arrow) in the lateral segment is hyperechoic with posterior enhancement on ultrasound (A). Color Doppler ultrasound demonstrated no visible internal vascular flow (B). The liver tumor (arrow) showed slight hypoattenuation on the axial CT with arterial phase (C) of the dynamic contrast study and hypoattenuation on the delayed phase (D). Axial CT with portal venous phase image demonstrated normal appearance of the liver contour without vascular invasion of the tumor (E). The lesion showed no signal drop-off on the out-of-phase of the axial MR image (F) compared with in-phase image (G). 3D-isotropic axial T2-weighted fast spin echo (volume isotropic fast spin echo acquisition, VISTA) (FA90 TR/TE 465/110) demonstrated a strongly high-signal mass (H). The tumor showed hypointense on the precontrast image (I), hypointense on the arterial phase (J), hypointense on the portal venous phase without capsule (K), and hypointense on the hepatobiliary phase (20 minutes after contrast injection) (L) of the gadoxetic acid-enhanced axial images with fat suppression. Biopsy needle (arrowhead) was observed within the tumor on the ultrasound-guided biopsy (M). The tumor showed weak enhancement on the first phase (N) of the CTHA and subsequent rim enhancement, so-called corona enhancement (arrowheads), on the second phase (O). The additional lesion in segment 8 showed hyperintense on the arterial phase of the gadoxetic acid-enhanced axial image with fat suppression (P) and hypointense on hepatobiliary phase (Q). Microscopic examination revealed HCC growing in a pseudoglandular pattern with rich fluid content (R). 3D, three-dimensional; CT, computed tomography; HCC, hepatocellular carcinoma; MR, magnetic resonance.

435-555); hemoglobin, 13.7 g/dL (normal 13.7-16.8); platelets, $18.6 \times 10^4/\mu L$ (normal 15.8-34.8); total bilirubin, 0.6 mg/dL (normal 0.4-1.5); aspartate aminotransferase, 23 U/L (normal 13-30); alanine aminotransferase, 29 U/L (normal 10-42); alkaline phosphatase, 280 U/L (normal 106-322); γ-glutamyltransferase, 23 U/L (normal 13-64); albumin, 4.6 g/dL (normal 4.1-5.1); and prothrombin time-international ratio, 1.02 (normal 0.90-1.10). Tests for hepatitis B virus surface antigen and antibodies against hepatitis C virus were negative. Hepatitis B core antibody was positive. Serum tumor markers were also in the normal range: carcinoembryonic antigen, 1.2 ng/mL (normal <3.2 ng/mL); carbohydrate antigen 19-9, 6.8 U/mL (normal <37 U/mL); alpha-fetoprotein, 3.6 ng/mL (normal <6.2 ng/mL); and proteins induced by the absence of vitamin K, 21 mAU/mL (normal <40 mAU/mL). The patient drank occasionally and had no history of alcohol abuse.

Ultrasound demonstrated a homogeneous echogenic mass with posterior enhancement in segment 2 and 3 measuring 3.2 cm in diameter (Fig. 1A) without Doppler flow (Fig. 1B). Computed tomography (CT) examination was performed using a 64-MDCT scanner (Toshiba Medical Systems, Tokyo, Japan). After precontrast images through the liver were obtained, 1.62 mL/kg of a nonionic iodinated contrast agent (Iopamiron 370; Bayer, Osaka, Japan) was injected with a fixed duration of 30 seconds at a variable injection rate by an automated power injector. Two continuous arterial phases were scanned with a bolus-triggered technique (monitoring frequency from 10 seconds after contrast injection, 1 second; trigger threshold, an increase of 100 HU in the descending aorta; and delay from trigger to initiation of scan, 15 seconds). The portal venous and delayed phases were acquired at 60 seconds and at 240 seconds, respectively. CT showed a low-density result in the precontrast phase, and isoattenuation to slight hypoattenuation in both the arterial (Fig. 1C) and delayed phases (Fig. 1D). Signs of liver cirrhosis such as nodular liver contour, atrophy of the right hepatic lobe and medial segment of the left hepatic lobe, and enlarged caudate and lateral left hepatic lobe were not seen (Fig. 1E). Vascular invasion was not observed. T1-weighted