Case Report

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CT Findings of Hepatic Metastasis from Hepatoid Adenocarcinoma of the Rectum Mimicking Hepatocellular Carcinoma: A Case Report

간세포암으로 오인된 직장에 발생한 간양 선암종의 간전이 CT 소견: 증례 보고

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***Corresponding author**
Jae Woon Kim, MD
Department of Radiology, Yeungnam University Hospital, 170 Hyeonchung-ro, Nam-gu, Daegu 42415, Korea.

Tel 82-53-620-3030
Fax 82-53-620-5484
E-mail sungho1999@ynu.ac.kr

Tae Hoon Lim, MD[1], Jae Woon Kim, MD[1]*, Min Jong Kim, MD[2]

Departments of [1]Radiology and [2]Pathology, Yeungnam University Hospital, Daegu, Korea

Hepatoid adenocarcinoma (HAC) is a rare form of adenocarcinoma that is diagnosed based on immuno-histochemical findings reminiscent of hepatocellular carcinoma (HCC). The clinical characteristics of HAC include increased levels of serum alpha-fetoprotein and a poor prognosis due to early liver metastasis. In particular, diagnosing liver metastasis of HAC can be challenging owing to radiological findings similar to those of HCC. Although HAC can occur in various organs, the stomach is the most common site. We present the case of a 64-year-old femalewho presented with multiple tumors in the liver. During subsequent examination, rectal cancer was identified and diagnosed as HAC through a biopsy. Herein, we report this case along with a literature review.

Index terms Alpha-Fetoprotein; Hepatoid Adenocarcinoma; Hepatic Metastasis; Rectal Cancer

INTRODUCTION

Hepatoid adenocarcinoma (HAC) is a rare extrahepatic adenocarcinoma that immunohistologically resembles hepatocellular carcinoma (HCC) and is characterized by alpha-fetoprotein (AFP) production. Stomach is the common site of occurrence; however, HAC occasionally occurs in the ovaries, pancreas, esophagus, lung, and both small and large intestines (1). HAC consists of sinusoidal structures and atypical polygonal

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cells with abundant eosinophilic granular cytoplasm that are immunohistologically similar to those in HCC (2). The prognosis of HAC is often poor due to its tendency to metastasize at the time of diagnosis (1). Imaging findings of HACs originating from the stomach have been reported in numerous cases (3). To our knowledge, no report has previously described the radiological features of rectal HAC with hepatic metastasis. Therefore, we present a case of rectal HAC with hepatic metastases and discuss its imaging features using dynamic CT.

CASE REPORT

A 64-year-old female was referred to our hospital for multiple hepatic masses detected on an abdominal CT scan performed at a local hospital to evaluate epigastric pain.

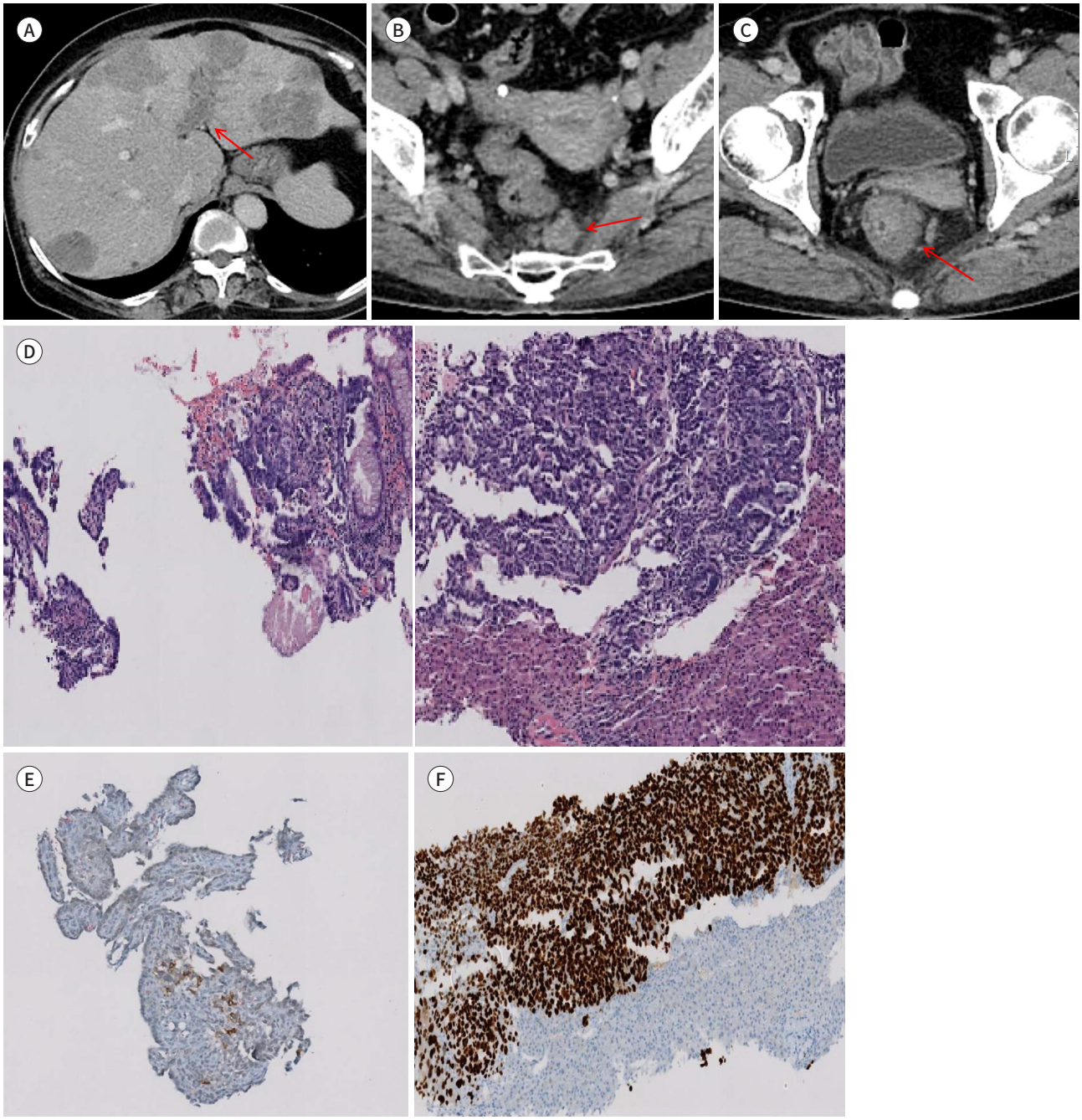
Upon physical examination, the patient appeared acutely ill with a blood pressure of 170/90 mmHg, heart rate of 81 beats/min, and temperature of 38°C. The patient reported relevant medical history for diabetes mellitus; however, other relevant conditions, including viral hepatitis or chronic alcoholism, were not present. Laboratory tests revealed an elevated white blood cell count of 15.83 k/μL (normal range, 4–10 k/μL) and a decreased hemoglobin level of 10.8 g/dL (normal range, 16 g/dL). However, serum bilirubin and liver enzyme levels were within acceptable limits (total bilirubin: 0.44 mg/dL; normal range: 0.1–1.2 mg/dL; aspartate aminotransferase: 30 IU/L; alanine aminotransferase: 39 IU/L). Serum AFP (2659 ng/mL; normal range < 7 ng/mL) and CA19-9 (142 U/mL; normal range < 37 U/mL) levels were markedly elevated. Her carcinoembryonic antigen (CEA) level (3.19 ng/mL; normal range, < 10 ng/mL) was normal. The hepatitis B surface antibody and antigen test results were negative.

External dynamic CT of the abdomen revealed multiple masses and portal vein thrombosis. CT abdomen showed mass lesions of heterogeneous density in both hepatic lobes, with thrombi in the left and S6 portal veins (Fig. 1). The largest tumor, measuring 71 mm × 37 mm × 66 mm, exhibited an infiltrative margin and a poor enhancement pattern, which did not correspond to the typical characteristics of HCC in the arterial and portal phases. Additionally, the CT scans revealed asymmetric thickening of the left lateral wall with luminal narrowing and perilesional infiltration in the rectum, suggestive of rectal cancer. The regional lymph nodes were enlarged and measured approximately 2 cm in size. The patient subsequently underwent flexible colonoscopy with rectal and liver needle core biopsies.

Histological findings from a rectal biopsy showed an atypical glandular structure with polygonal cells. Immunohistochemical staining for AFP was focally positive in these cells. A liver tumor biopsy revealed similar histological findings, with cells arranged in a poorly developed glandular structure exhibiting hyperchromatic nuclei and a moderate amount of cytoplasm. These cells also tested positive for AFP, glutamine synthetase, and SALL4. Based on the clinicoradiological features, histological findings, and immunohistochemical results, a diagnosis of HAC originating from the rectum with hepatic metastasis was established (Fig. 1).

This study was approved by our Institutional Review Board (IRB No. 2022-08-051). Owing to the retrospective nature of the study, the need for informed consent was waived.

Fig. 1. Hepatic metastasis from hepatoid adenocarcinoma of rectum, mimicking hepatocellular carcinoma in a 64-year-old female.
A. Axial view of portal phase abdominal CT shows multiple irregular masses located in both lobes of the liver with a poorly enhanced pattern and portal vein thrombosis (arrow) (serum AFP: 2659 ng/mL; normal range: < 7 ng/mL).
B. Enlargement of regional lymph nodes (arrow) in the mesorectum are noted.
C. Axial view of portal phase abdominal CT shows asymmetric left lateral wall thickening with luminal narrowing and perilesional infiltration in the rectum (arrow), suggesting rectal cancer.
D. Pathologic findings of liver mass and rectal mass obtained by core needle biopsy. Atypical glandular structure with polygonal cells and similar histologic findings in hepatic mass (right) and rectal mass (left) (hematoxylin and eosin stain, × 100).
E. Immunohistochemical staining (× 100) shows positive for AFP in the rectal mass.
F. Immunohistochemical staining (× 100) shows positive for SALL-4 in the hepatic mass.
AFP = alpha-fetoprotein, SALL-4 = spalt like transcription factor 4



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DISCUSSION

HAC is a specific type of adenocarcinoma that is diagnosed when its histological morphology and immunophenotype resemble those of HCC. HAC of the stomach was first described by Jourreille in 1970 (4). Since then, HAC has been reported in various organs, including the ovaries, esophagus, lungs, colon, and stomach (5). Approximately 84% of HAC cases originate in the stomach, whereas HAC in the colon or rectum is distinctly rare, representing only 2% of all reported cases (6). HAC is associated with a poorer prognosis than that of adenocarcinoma, which is attributed to AFP production. AFP, a protein typically found in the fetus, indicates retrodifferentiation to the prenatal state when elevated in tumor cells (7).

The diagnosis of HAC is challenging for several reasons. First, although serum AFP levels increased in most cases (≥ 10 μg/L) (2), it was not a specific marker. Second, HAC may not be definitively diagnosed even with a biopsy. The diagnosis relies on immunophenotypic evidence and microscopic histological morphology. Microscopically, HAC exhibited eosinophilic cytoplasm and large polygonal hepatocyte-like cells with centrally located nuclei. Differentiating liver-related metastatic HAC from HCC based on microscopic features in liver biopsies can be particularly challenging, as they share similarities. Therefore, identifying HAC at different sites is crucial.

The major immunochemical markers of HAC include AFP, CEA, CK18, CK19, pan-cytokeratin (AE1/AE3), and glypican-3. Su et al. (7) reviewed 217 HAC cases and found that AFP staining was positive in the majority of HAC cases (91.6%). CEA was positive in 78.7% of the patients, and all HAC cases were positive for CK18, CK19, and glypican-3.

In this case, immunohistochemical staining was positive for AFP, glutamine synthetase, and SALL4, with elevated serum AFP levels, similar to other HAC cases. However, some HAC cases have been reported without elevated serum AFP levels, which are typically associated with the absence of hepatic metastasis. Elevated serum AFP levels are associated with a poor prognosis (8).

In this case, it was challenging to determine whether the tumor should be regarded as a synchronous primary double cancer or a primary cancer with hepatic metastasis. Abdominal CT revealed multiple masses with a poorly enhanced pattern, inconsistent with typical HCC findings, suggesting possible metastasis from rectal cancer. However, there was no reason to exclude the possibility of HCC. Similarly, a previous study showed that HCC with portal vein thrombosis exhibited a high incidence of atypical enhancement characteristics associated with secondary compensatory increased arterial supply to the background liver (9). However, portal vein thrombosis is rare in patients with liver metastasis, including colorectal cancer.

Tumor thrombus is more frequent in HAC. Araki et al. (10) reported an association between gastric cancer, portal vein thrombosis, and elevated AFP. Liver metastasis from HAC exhibits imaging features similar to those on dynamic CT and can mimic HCC. Differentiating HCC from liver metastasis from HAC using contrast CT remains a challenge.

Here, we describe the imaging and immunohistochemical findings of the mass and the liver metastasis. Diagnosing liver metastatic HAC can be challenging owing to radiological findings similar to those of HCC. Radiologists should consider the possibility of HAC if multiple liver masses with elevated AFP levels radiologically resemble HCC.

Author Contributions

Resources, K.M.J.; supervision, K.J.W.; validation, K.J.W.; writing—original draft, L.T.H.; and writing—review & editing, all authors.

Conflicts of Interest

The authors have no potential conflicts of interest to disclose.

ORCID iDs

Tae Hoon Lim https://orcid.org/0000-0002-5152-5603
Jae Woon Kim https://orcid.org//0000-0002-0963-5948
Min Jong Kim https://orcid.org/0000-0003-2798-863X

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간세포암으로 오인된 직장에 발생한 간양 선암종의 간전이 CT 소견: 증례 보고

임태훈[1] · 김재운[1*] · 김민종[2]

간양 선암종은 선암종의 드문 유형 중 하나로 면역표현형에 있어 간세포암과 유사한 조직 소견이 있는 경우 진단할 수 있다. 임상적으로 혈청 알파태아단백질의 증가와 조기 간 전이로 인한 나쁜 예후를 보인다. 특히 간 전이의 경우 간세포암과 영상의학적 소견이 비슷하여 감별에 어려움을 겪는다. 여러 장기에서 발생할 수 있으나 위에서 가장 많이 기원하며 직장에서 기원하는 경우는 매우 드문 것으로 알려져 있다. 본 증례에서는 64세 여자 환자가 간에 발생한 수 개의 종양을 주소로 내원했다. 검사과정에서 직장암을 발견하였으며 이후 조직검사를 통해 간양 선암종으로 진단하였다. 이에 저자들은 문헌고찰과 함께 보고하는 바이다.

영남대학교병원 [1]영상의학과, [2]병리과