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## Interventional Radiology

## Percutaneous radiofrequency ablation for a recurrent metastasis after resection of liver metastases from an ileal clear-cell sarcoma: Long-term local tumor control

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#### ABSTRACT

Clear-cell sarcomas (CCSs) in the gastrointestinal tract are extremely rare and aggressive tumors. We present the first case of a CCS arising in the ileum and metastasizing to the liver; our patient was a 60-year-old man. After the resection of the CCS and the liver metastases, a new liver metastasis developed, which was treated via percutaneous radiofrequency ablation only. At the 5-year follow-up, the ablated region was stable without local tumor progression. Percutaneous radiofrequency ablation is a viable local treatment option for recurrent metastases from an ileal CCS if they are detected when small and at an early stage in follow-up studies.

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#### Introduction

Clear-cell sarcoma (CCS), also termed malignant melanoma of soft parts, is a rare soft tissue sarcoma with morphologic, immunohistochemical, and ultrastructural characteristics similar to those of malignant melanoma. CCS of the gastro-intestinal tract is an extremely rare and aggressive disease. Here we present the first report of a CCS arising in the ileum and metastasizing to the liver. After the resection of the CCS and liver metastases, a new liver metastasis was treated via percutaneous radiofrequency ablation (RFA) only. At the 5-year follow-up, the ablated region was stable without local tumor progression.

#### **Case presentation**

A 60-year-old man was admitted to our hospital after experiencing melena for 7 days and hematochezia for 3 days. Contrastenhanced abdominopelvic computed tomography (CT) showed a possible abnormal eccentric enhancing wall thickening in the ileal loop (Fig. 1A), and the colon was filled with high-density hemorrhagic fluid. Subsequent contrast-enhanced T1-weighted magnetic resonance imaging (MRI) revealed 2 large cystic tumors with enhancing papillary regions and septa in the hepatic lobes that appeared to be necrotic metastases or primary malignant biliary cystic tumors (Fig. 1B). T2-weighted MRI showed high-signal intensity masses with

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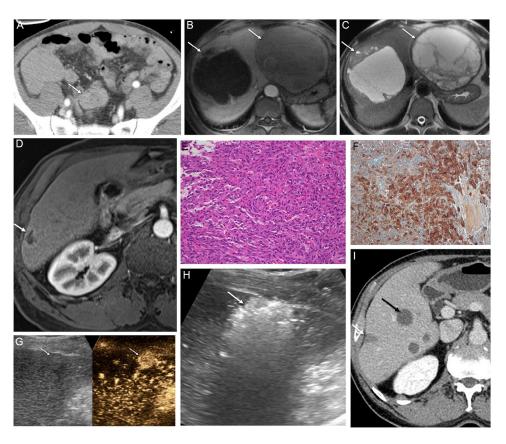


Fig. 1 – Ileal clear-cell sarcoma with multiple hepatic metastases: (A) Contrast-enhanced abdominopelvic computed tomography shows a possible abnormal eccentric enhancing wall thickening (arrow) in the ileal loop. (B) T1-weighted liver MRI reveals 2 large cystic tumors (arrows) with enhancing papillary portions and septa in the hepatic lobes. (C) T2-weighted MRI reveals high-signal intensity masses (arrows) with solid portions and multiple septa. (D) Contrast-enhanced T1-weighted liver MRI at the 2-year follow-up shows a 2.0-cm peripheral enhancing nodule with low signal intensity in segment 6 of the liver (arrow). (E) Hematoxylin- and eosin-stained tumor sections obtained via ultrasonography-guided biopsy have a nested or pseudoalveolar pattern (×100). (F) Immunohistochemistry of tumor sections obtained as in panel E shows diffuse expression of S-100 protein in the tumor cells (×200). The recurrent metastatic clear-cell sarcoma was confirmed histopathologically. (G) Contrast-enhanced ultrasonography for RFA planning reveals an ill-defined isoechoic lesion (arrow), with arterial hypervascularity appearing within 15 seconds after the injection of the contrast agent SonoVue (arrow) and washout at 30 seconds. (H) Percutaneous RFA was performed by using a 200-W generator in the impedance-controlled mode and a monopolar single internally cooled electrode with a 3-cm active tip, with hydrodissection for 12 minutes (arrow). (I) Five years after RFA, the ablated tumor region is stable without local tumor progression (white arrow). However, multiple new liver metastases are seen in other segments of the liver (black arrow). MRI, magnetic resonance imaging; RFA, radiofrequency ablation.

solid portions and multiple septa (Fig. 1C). On conventional superior mesenteric arteriography, there was some leakage of the contrast medium from a branch of the ileocecal or terminal ileal artery.

Active bleeding in the eccentric ileal mass was noted. Although superselective embolization was attempted, an autologous clot and arterial spasm developed and the bleeding stopped. Because the patient's hemoglobin level was below 6.9 g/dL (normal range, 13.0-17.0 g/dL), a small bowel resection of the enhancing eccentric mass in the ileum and a bisegmentectomy of the 2 large hepatic metastases were performed. Based on the final pathology examination of surgical specimens, a primary CCS arising from the ileum was diagnosed, and the hepatic masses were thought to be metastases of the CCS. To further treat the CCS, the patient underwent 6

cycles of combination chemotherapy consisting of cyclophosphamide, vincristine, adriamycin, and dimethyl-triazeno imidazole carboxamide.

Positron emission tomography-CT at the 2-year follow-up showed a focal uptake (standardized uptake value of 2.5) in segment 6 of the liver, and contrast-enhanced T1-weighted liver MRI revealed a 2.0-cm nodule with peripheral enhancing low-signal intensity in segment 6 (Fig. 1D). Ultrasonographyguided liver biopsy of the nodule was performed because a recurrent liver metastasis was suspected. The tumor was composed of sheets and bundles of cytologically uniform epithelioid cells with small nucleoli and eosinophilic cytoplasm. Microphotographs of hematoxylin- and eosin-stained tumor sections showed a characteristic nested or pseudoalveolar pattern (Fig. 1E). Immunohistochemical staining showed a diffuse

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