Hepatic infarction caused by vascular migration of fiducial marker previously placed under endosonographic guidance to assist radiotherapy

Fig. 1 A computed tomography (CT) scan from a 39-year-old woman with jaundice revealed a low attenuation 3.3×2.0 cm caudate mass with left hepatic artery and left portal vein invasion, and bile duct obstruction.

A 39-year-old woman attended our hospital with jaundice. A computed tomography (CT) scan revealed a low attenuation 3.3×2.0 cm mass in the caudate lobe of the liver with left hepatic artery and left portal vein invasion, and bile duct obstruction (► **Fig. 1**). Endoscopic biliary drainage and endoscopic ultrasound fine-needle aspiration (EUS-FNA) were performed. A biopsy taken from the mass contained adenocarcinoma cells. Because of the unresectability of this cholangiocarcinoma, three fiducial markers were inserted into the tumor under EUS guidance (► **Fig. 2**). Image-guided radiation therapy was then performed with a 26-Gy dosage delivered in four fractions. The patient also received systemic chemotherapy and photodynamic therapy. After 5 months, a follow-up CT scan showed that the tumor mass in the caudate lobe was markedly smaller. However, thrombosis of left and right (P7) branches of the portal vein was detected. No definite migration of any fiducial marker was seen.

A further 6 months after image-guided radiation therapy, the patient was again admitted with a fever. A CT scan revealed a hepatic infarction at S6 because of right portal vein occlusion resulting from migration of a fiducial marker to the right portal vein (► **Fig. 3**). The patient then underwent percutaneous drainage with antimicrobial therapy and recovered with no further adverse events.

EUS-guided fiducial placement for abdominal malignancies has been reported to be safe and technically feasible [1,2].

Fig. 2 a,b As the cholangiocarcinoma was unresectable, three fiducial markers were inserted into the tumor under endoscopic ultrasound (EUS) guidance.

Fig. 3 a, b A computed tomography (CT) scan 6 months after radiation therapy revealed a hepatic infarction at S6 because of right portal vein occlusion as a result of migration of a fiducial marker to the right portal vein.

Spontaneous fiducial migration is a relatively rare occurrence as are migration-related complications [1,2]. Therapeutic data for a hepatic infarction caused by spontaneous fiducial migration are limited, and our case was resolved with conservative care. This case may represent the first report of a hepatic infarction caused by spontaneous fiducial migration.

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Dongwook Oh, Do Hyun Park, Young Whan Cho, Tae Jun Song, Sang Soo Lee, Dong Wan Seo, Sung Koo Lee, Myung-Hwan Kim

Division of Gastroenterology, Department of Internal Medicine, University of Ulsan College of Medicine, Asan Medical Center, Seoul, Korea

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Corresponding author

Do Hyun Park, MD, PhD
 Division of Gastroenterology
 Department of Internal Medicine
 University of Ulsan College of Medicine
 Asan Medical Center
 88, Olympic-Ro 43-Gil
 Songpa-gu
 Seoul 138-736
 Korea
 Fax: +82-2-4760824
 dhpark@amc.seoul.kr