Three pulmonary resections for metastatic lung cancer from hepatocellular carcinoma

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Abstract
We describe a patient who underwent pulmonary resection three times for metastatic lung cancer from hepatocellular carcinoma (HCC). A 56-year-old man, who had a past history of right hepatic lobectomy for HCC, was referred to our department with an abnormal finding on chest computed tomography (CT). Chest CT showed three abnormal shadows, in the right upper lobe (S3b), right middle lobe (S5), and right lower lobe (S10), respectively, and there was no evidence of intrahepatic recurrence. He underwent surgical resections (right upper lobectomy and partial resections) for the metastatic lung cancer from HCC. Subsequently, 12 and 16 months after the first pulmonary resection, metastatic lung cancer recurred, in right S6 and S9, respectively. Because there was no evidence of intrahepatic recurrence and because of the feasibility of curative resection, we performed partial pulmonary resections. He had no postoperative morbidity, and is alive with no evidence of disease 60 months after the first pulmonary resection.

Key words Repeated pulmonary resections · Metastatic lung cancer · Hepatocellular carcinoma

Introduction
To prolong survival, if metastatic lung cancer from colorectal cancer or osteosarcoma recurs, repeat resections are usually done. Although pulmonary metastasis is the most common site of extrahepatic spread from hepatocellular carcinoma (HCC), the efficacy of surgical resection of such metastases has not been clarified. In this report, we describe a patient who underwent three pulmonary resections for metastatic lung cancer from HCC, and he has survived for 60 months since the first pulmonary resection.

Case report
A 56-year-old man with an abnormal finding on chest computed tomography (CT) was referred to our department. He had a past history of right hepatic lobectomy for HCC, done in August 2000. The laboratory findings before the operation were positive for hepatitis B surface antigen, and the serum alpha-fetoprotein (AFP) concentration was 2018 ng/ml, but serum protein induced by vitamin K absence-II (PIVKA-II) was not measured. Abdominal CT showed a 6-cm-diameter tumor in the right hepatic lobe, but there was no evidence of extrahepatic metastasis. The histology of the tumor was poorly differentiated HCC with nodular and compact pattern (Ig, Fc(−), Sf(−), N(−), Vp 2, Vv 0, B 0, IM 0, P 0, T 3, M 0, stage III). His postoperative course was uneventful. He did not receive anti-hepatitis B therapy in his clinical course. The AFP concentration decreased postoperatively, but was still high (120 ng/ml).

In August 2001 he was admitted to our department for surgical resection of metastatic lung cancer from HCC. Chest CT confirmed the presence of three masses; a 24-mm, a 5-mm, and a 4-mm mass in the right upper lobe (S3b), right middle lobe (S5), and right lower lobe (S10), respectively (Fig. 1a). Abdominal dynamic magnetic resonance imaging (MRI) did not show intrahepatic recurrence. The AFP and PIVKA-II concentrations were elevated, at 523 ng/ml and 53 ng/ml, respectively. He underwent partial resection of right S5, S10, and

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right upper lobectomy. Histopathological examinations of the three pulmonary masses showed lung metastasis of poorly differentiated HCC. His postoperative course was uneventful and the AFP and PIVKA-II concentrations decreased, to 9.7 ng/ml and 14.3 ng/ml, respectively. He continued to visit our hospital at monthly intervals. Twelve months after the initial pulmonary resection, a 7-mm coin lesion was detected on chest CT, the mass enlarged to 20 mm (Fig. 1b) and the AFP concentration increased to 129 ng/ml after 15 months. There was no evidence of intrahepatic recurrence. He underwent partial resection of right S6, and the histological finding was lung metastasis of moderately differentiated HCC. The AFP concentration decreased to 5.0 ng/ml. Sixteen months after the initial pulmonary resection, a 12-mm coin lesion was detected on chest CT (Fig. 1c) and the