Hemoperitoneum Secondary to Spontaneous Rupture of Hepatic Metastasis from Lung Cancer

Toru Kadowaki, Hironobu Hamada, Akihito Yokoyama*, Ryoji Ito, Sanae Ishimaru, Hiroshi Ohnishi*, Hitoshi Katayama, Miki Oshima, Takafumi Okura, Katsumi Kito** and Jitsuo Higaki

Abstract

We describe a rare case of hemoperitoneum secondary to spontaneous rupture of hepatic metastasis from lung cancer. A 72-year-old man with non-small cell lung cancer was admitted to our hospital with sudden onset of right upper abdominal pain and hypovolemic shock. Laboratory tests showed severe anemia. Abdominal contrast-enhanced computed tomography revealed massive ascites and multiple liver metastases. Rupture of a metastatic liver tumor was suspected. Only palliative therapy was performed. The patient’s general condition gradually worsened, and he died 2 months after admission. Autopsy examination revealed hemoperitoneum due to a ruptured metastatic liver tumor originating from pulmonary squamous cell carcinoma. (Internal Medicine 44: 290–293, 2005)

Key words: hemoperitoneum, spontaneous rupture, hepatic metastasis, non-small cell lung cancer

Introduction

Spontaneous rupture of hepatocellular carcinoma occurs in approximately 10% of cases in Japan (1). However, it is uncommon for a metastatic liver tumor to rupture and cause hemoperitoneum, and it is extremely rare for this condition to occur with hepatic metastases from a lung cancer. To the best of our knowledge, only two cases have been reported in the English literature (2, 3).
were performed, and the patient’s general condition and anemia improved intermittently. On January 12, 2003, sudden onset of epigastralgia occurred. Abdominal contrast-enhanced computed tomography revealed intratumoral hemorrhage from the porta hepatis. No aggressive therapy was done due to the patient’s poor general condition. His condition continued to worsen, and he died on March 5, 2003.

Autopsy examination revealed hemoperitoneum due to rupture of a metastatic liver tumor originating from pulmonary squamous cell carcinoma. Metastases were also discovered in the lungs, fifth lumbar vertebra, peritoneum, and retroperitoneum. There was massive bloody ascites (1,700 ml). A cavity formed by the inferior aspect of the liver, the duodenal wall, and the omentulum was filled with necrotic material. There were many necrotic metastases on the surface of the liver. An area of exposed necrotic tumor tissue was observed in the inferior aspect of the liver (Fig. 2). The histopathological findings of the tumor were very similar to those of the primary tumor (Fig. 3A, B). We concluded that this exposed necrotic tumor which metastasized from the lung had ruptured.

Discussion

The ruptured metastatic tumor we encountered was of a very rare type in that it was a hepatic metastasis from a lung cancer. As noted, rupture of a metastatic liver tumor is rare in comparison to rupture of hepatocellular carcinoma (4, 5). This could be explained by the tendency of metastatic tumors to be more fibrotic, less vascular and invasive, and to penetrate the liver capsule less frequently than hepatocellular carcinomas (6, 7). According to a review by Akriviadis, fewer than 50 cases of hemoperitoneum secondary to spontaneous rupture of liver metastasis have been reported worldwide (7), and the rarest cases are those in which the ruptured hepatic tumor was a metastasis from a lung cancer. Liver metastases are found in 30 to 45% of cases of non-small cell lung cancer, and in 17 to 34% cases of small cell lung cancer on autopsy (8). To the best of our knowledge, only two cases are reported in the English language literature (2, 3). Histologically, one was a confirmed case of adenocarcinoma.
However, there was no description of anticancer treatment (2). The other was a confirmed case of small cell carcinoma (3). The patient had not received any radical therapy for the tumor because he was diagnosed as lung cancer with liver metastasis by autopsy examination (3). The mechanism of rupture was considered to be tumor necrosis, increased intravascular pressure due to tumor emboli, or direct pressure against the capsular surface (2, 3). Necrotic tendency of the liver metastases was not documented (2, 3). In the present case, the histologic diagnosis was poorly differentiated squamous cell carcinoma with a remarkable necrotic tendency, and tumor necrosis was thought to have caused the hepatic rupture.

The important clinical features of hepatic rupture include a history of malignancy, abdominal pain, hypotension, severe anemia, and elevated liver enzymes (2). All these features in our case led us to suspect hepatic rupture. CT findings are also helpful in the diagnosis of ruptured hepatic metastasis. Choi et al reviewed CT findings of 12 patients with ruptured hepatocellular carcinoma and reported that peripheral location, protruding contour, discontinuity of the hepatic surface, and surrounding hemoperitoneum are helpful diagnostic indicators of ruptured hepatocellular carcinoma (9). The CT findings in the present case, especially the liver metastasis in segment 6, were very similar to those described in the report of Choi et al. We strongly suspected rupture of a liver metastasis, although there is no published review of computed tomography features of ruptured liver metastasis.

Treatment of hemoperitoneum secondary to spontaneous rupture of metastatic liver tumor depends on the tumor size, tumor location, and severity of bleeding, with control of the hemorrhage being the major objective (6). Most patients are in shock or unstable, and therapy tends to be palliative rather than curative. The goal of treatment should be to control the hemorrhage quickly and effectively. Hepatic wedge resection or lobectomy, suture ligation of the bleeding source, or ligation of the hepatic artery may accomplish this goal (6). Transarterial embolization (TAE) has also been used with moderate success to treat bleeding hepatocellular carcinoma (10). Spontaneous ruptures of hepatic metastasis from renal cell carcinoma and from esophageal cancer have been treated successfully by TAE (11, 12). TAE should be investigated as a palliative therapeutic option for rare cases of bleeding hepatic metastases, including massive hemorrhage caused by spontaneous rupture of these tumors. Spontaneous rupture of liver metastasis is usually a terminal event; most patients live less than 6 weeks (6). Of the two reported patients with a ruptured hepatic metastasis from lung cancer, one patient underwent surgery and died 17 hours after admission (3) and the other received supportive care and died 6 days after admission (2). The present patient survived for 8 weeks after hepatic rupture. This extended survival could be explained by the tumor’s apparent rupture into the cavity formation inferior to the liver, which could have physically contained the hemorrhage.

We presented a rare case of hemoperitoneum secondary to spontaneous rupture of hepatic metastasis from lung cancer. Clinical and CT features were of a great help in diagnosing ruptured hepatic metastasis. The cavity formation inferior to the liver, where the tumor’s rupture had occurred, could have prolonged the patient’s survival.

Figure 3. A) Microscopic examination of the primary tumor showed interconnecting sheets of cells with extensive tumor necrosis (arrows) and scant keratinization which were consistent with poorly squamous cell carcinoma (HE stain, ×100). B) Microscopic examination of the liver metastasis in the inferior aspect of the liver showed the similar histopathological findings of the primary tumor (arrows, HE stain, ×100).
References


