Advanced Gastric Cancer with Liver Metastasis Effectively Treated by Intra-Hepatic Arterial Infusion of 5-FU, MMC and Peroral Administration of 5-FU: A Case Report

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Summary: We have experienced a case of advanced gastric cancer with liver metastasis effectively treated by intra-hepatic arterial infusion of 5-fluorouracil (5-FU), mitomycin C (MMC) and peroral administration of 5-FU. The patient was a 48-year-old male diagnosed as having advanced gastric cancer with multiple liver metastasis in the bilateral lobes of the liver. This patient was treated by intra-hepatic arterial infusion of 5-FU (250 mg/2 days × 8 doses), MMC (20 mg × 1 dose, 6 mg/2 weeks × 6 doses) and peroral administration of 5-FU (200 mg/day). At 14 weeks later, a CT revealed that the metastatic liver tumors had disappeared. However, at 7 months after the therapy, the patient eventually died of liver and brain metastasis. These results suggested that intra-hepatic arterial infusion of 5-FU and MMC was an effective therapy for metastatic tumors in the liver, but we need to perform intra-hepatic arterial infusion using a new prolonged regimen to treat the liver metastasis.

Key words gastric cancer, liver metastasis, chemotherapy

INTRODUCTION

The prognosis of gastric cancer with liver metastasis is very poor. The six-months survival rate of such cases has been only 20%-50% [1]. Because many gastric cancers with liver metastasis have multiple metastatic tumors in the liver, the indication for surgical resection is rare. Moreover, the non-curative factors of many cases are not only liver metastasis but also lymph node metastasis and peritoneal dissemination. However, some authors have reported gastric cancer with liver metastasis effectively treated by intra-hepatic infusion of an anti-cancer drug [2-5]. In this article, we report a case of gastric cancer with liver metastasis effectively treated by a combination with intra-hepatic arterial infusion of 5-FU, MMC and peroral administration of 5-FU.

CASE REPORT

A 48-year-old man visited a private hospital because of discomfort in the upper abdomen, in July 1993. An upper gastrointestinal endoscopic examination showed advanced gastric cancer type 2 on the lesser curvature in the upper third body of the stomach. The patient was referred to Kurume University Hospital for further examination and treatment for gastric cancer on December 15, 1993. The liver, spleen and tumor were not palpable on physical examination, on admission. The serum levels of carbohydrate antigen 19-9 (CA19-9), carcinoembryonic antigen (CEA) and α-fetoprotein were normal, but carbohydrate antigen 72-4 was elevated at 5.6 U/ml. Gastrography showed advanced gastric cancer type 2, about 6.0×4.0 cm in size, on the lesser curvature in the upper body of the stomach. Computed tomography (CT) showed ring-like enhanced low-density
Fig. 1. Before the treatment, CT showed ring-like enhanced low-density masses of 2 cm in size in the liver suggesting multiple metastatic liver tumors. 

Fig. 2. At 14 weeks after commencing the therapy, the metastatic liver tumor had disappeared, but new swelling in the para-aortic lymph nodes suggested recurrence of gastric cancer on CT.

masses of 2 cm in size at S4, S8, S7, S6, S5, and S2 respectively in the liver suggesting multiple metastatic liver tumors, and swellings in the No. 3 and No. 7 lymph nodes (Fig. 1). Surgery was performed through a median laparatomy on December 21, 1993. The primary tumor was localized in the gastric wall, but several tumors were recognized in the bilateral lobes of the liver, confirming liver metastasis. The operation methods were total gastrectomy, with D1 lymph node resection, ρ-Roux-Y method reconstruction, and cholecystectomy. Angiography and the setting of an intra-hepatic arterial infusion of anticancer drug system were performed on January 14, 1994. Angiography showed multiple-ring enhanced tumor staining in the bilateral lobes of the liver. The left hepatic artery was obstructed by a coil 3.0 × 4.0 mm in size. Setting of intra-hepatic arterial tube in the right hepatic artery and of subcutaneous reservoir in the right lower abdomen were performed. Combination with intra-hepatic arterial infusion of 5-FU (250 mg/2days × 8 doses), MMC (20 mg × 1 dose, 6 mg/2weeks × 6 doses) and peroral administration of 5-FU (200 mg/day) was begun from January 25. At 14 weeks after commencing the therapy, the metastatic liver tumor had disappeared, but new swelling in the para-aortic lymph nodes suggested recurrence of gastric cancer on CT (Fig. 2). Therefore, administration of lentinan (2 mg/week iv) was given. At 1 month after the chemotherapy, the serum CA 19-9, CA 72-4 level increased to 32.8 U/ml, 10 U/ml, respectively. At 4 months after the therapy, the serum CA 19-9 level was 32.1 U/ml, but serum CA 72-4 level increased to 49 U/ml. At 7 months after the therapy, the patient eventually died of liver and brain metastasis.

DISCUSSION

The prognosis of gastric cancer with liver metastasis is very poor. Many cases of gastric cancer with liver metastasis have multiple metastatic tumors in the liver. Even if metastatic liver tumors seemed to be resectable on CT or on intraoperative findings, many cases also have many micrometastases in the liver. Ushijima et al. [6] reported that the average survival period from multiple liver metastasis in the bilateral lobes was only 4.2 months. Recently, intra-hepatic arterial infusion has been performed, using 5-FU, adriamycin (ADM), MMC, and cisplatin (CDDP) [3-5,7,8]. There are several case reports that the metastatic lesions in the liver disappeared and the patient survived for a longer period [3-5,7,8]. Aoki [9] reported that intra-hepatic arterial infusion of an anti-cancer drug was better than systemic administration for treating the liver metastasis. In our case, multiple metastatic liver tumors had disappeared on CT at 14 weeks after commencing the intra-hepatic arterial infusion of 5-FU and MMC, but lymph node recurrence was recognized. At 7 months after the therapy, the patient eventually died of liver and brain metastasis. Nakagawa et al. [4] reported that three cases of gastric cancer with multiple liver metastases
were treated with intra-hepatic arterial infusion of low-dosage CDDP and oral administration of high-dosage 5'-DFUR after surgery, and all per lived more than one year, but there has been no case responsive to intra-hepatic arterial infusion of 5-FU alone. Arai et al. [10] reported that the efficacy of intra-hepatic arterial infusion of a combination of 5-FU, ADM and MMC was high, but intra-hepatic arterial infusion of MMC and 5-FU has shown no response. However in our case, the multiple metastatic liver tumors disappeared after intra-hepatic arterial infusion of 5-FU and MMC. So, we need to perform intra-hepatic arterial infusion using a new prolonged regimen to treat the liver metastasis.

REFERENCES

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