Introduction

Colorectal carcinoma is one of the leading causes of death in the elderly. About 20% of patients present with liver metastasis at the time of diagnosis. The other common metastatic sites of colorectal carcinoma include the lungs, bone and brain. Splenic metastases from colorectal carcinomas are rare and usually occur in association with other extensive metastasis. Isolated splenic metastasis from colorectal carcinoma is unusual with only a couple of dozen cases. Although resection of liver metastasis from colorectal carcinoma may benefit some patients, the role of resection in synchronous isolated splenic metastasis is not well known. We report the case of an old man with synchronous isolated splenic metastasis from colorectal carcinoma treated by left hemicolecction and splenectomy.

Case Report

An 84-year-old man presented with intermittent tarry stool and bloody stool for 1 week. He also complained of general fatigue, dizziness, and epigastric fullness. Physical examination revealed mild splenomegaly, and the liver was not palpable. The rectal examination was also unremarkable. Iron deficiency anemia was identified by hematocrit (20.4%; reference range, 40–54%), low mean corpuscular volume (56.8 fL; reference range, 80–98 fL), low serum iron level (17 μg/dL; reference range, 49–181 μg/dL), and low serum ferritin level (29 ng/dL; reference range, 30–400 ng/dL). Esophagogastroduodenoscopy was unremarkable, and colonoscopy demonstrated proximal sigmoid colon stricture and several hyperemic nodular and polypoid lesions situated 30 cm from the anal verge. Pathology of these nodular lesions was adenocarcinoma. Subsequent abdominal sonography revealed one ill-defined hyperechoic nodule in the spleen. Computed tomography of the abdomen and pelvis (Figure 1) showed evidence of short segmental annular wall thickening at the sigmoid colon and splenic flexure favoring multifocal colonic carcinoma, and one hypovascular tumor in the spleen, more in favor of splenic metastasis.
At laparotomy, one annular tumor was in the sigmoid colon. The other tumor at the splenic flexure of colon was adhered and invaded to the small intestine and omentum. However, the spleen showed no evidence of direct tumor invasion. The patient underwent subsequent left hemicolectomy as well as wedge resection of the small intestine and splenectomy.

On histopathologic examination, the colonic tumor at the splenic flexure showed a moderately differentiated intestinal-type adenocarcinoma composed of single and fused malignant glands lined by tall columnar intestinal-type neoplastic cells in all layers of the colonic wall that directly invaded to the adjacent jejunum (T4). Immunostaining showed that the tumor cells were cytokeratin (CK) 7-negative and CK 20-positive. Eight of 18 excised regional lymph nodes were positive for metastasis (N2). The spleen measured $12 \times 10 \times 6$ cm and weighed 300 g. Sections of the spleen (Figure 2) revealed multiple metastatic tumors in the splenic parenchyma (the largest tumor was 4 cm at the greatest dimension; M1). The morphology of the splenic tumors revealed intestinal-type adenocarcinomas (Figure 3) with CK 7-negative and CK 20-positive tumor cells, similar to the colonic tumor at the splenic flexure, and consisted of a metastatic moderately differentiated adenocarcinoma from colon to spleen.

The postoperative course was uneventful, and the patient was discharged 2 weeks later.

Discussion

When metastasis is present in a colorectal carcinoma, it is usually liver metastasis\(^1\). Hence, discovering a splenic tumor in our patient was unexpected. Berge\(^3\) reported the incidence of splenic metastasis as 2\% of 1,019 autopsy cases with colon and rectal carcinomas, and all had other organ metastasis. Isolated splenic metastases from colorectal carcinoma are rare and, to the best of our knowledge, there are only three cases of synchronous isolated splenic metastasis\(^4\). As with our case, the left colon was the primary site in these cases.

Splenic metastasis from various tumors revealed minor symptoms, including weight loss, epigastric pain, splenomegaly, left hypochondriac pain, hypersplenism and spontaneous rupture\(^5,6\). Our patient’s presentation involved nonspecific epigastric pain, and it is impossible to know whether the symptoms were caused by the splenic tumor. In such cases, it is not unusual to order abdominal ultrasound, especially in patients with a high suspicion of colorectal carcinoma. Using ultrasound, Ishida et al.\(^7\) reported four cases of isolated splenic metastasis from colorectal carcinoma. Thus, they concluded that it was necessary to pay attention to the spleen in the colorectal carcinoma patient either in preoperative or follow-up examinations.

The reason that the spleen seems resistant to metastasis is unclear, and several theories have been proposed. Sappington\(^8\) explained that the low frequency of splenic metastasis may relate from the sharp angle of the splenic artery with celiac axis. Kettle\(^9\) suggested that the rhythmic contraction of the spleen might prevent malignant emboli from growing in that location. Even if the tumor cells reach the spleen, they may be...
inhibited by the immune surveillance\textsuperscript{10}. The absence of afferent lymphatic vessels in the splenic parenchyma is another possibility\textsuperscript{8}. Although lymphatic vessels present in capsular and subcapsular regions can cause subcapsular splenic metastasis\textsuperscript{11}, most authors proposed that splenic metastasis of colorectal cancer occurs via the vascular routes, because the metastasis was limited within the splenic parenchyma\textsuperscript{5}. In either metachronous or synchronous splenic metastasis from colorectal carcinoma, the left colon was the predominant site of the primary tumor\textsuperscript{4}. This phenomenon may be explained by a possible retrograde action from the inferior mesenteric vein to the splenic vein and spleen\textsuperscript{12}.

The long-term survival after splenectomy in patients with metachronous splenic metastasis from colorectal carcinoma varied from 6 months to 7 years\textsuperscript{5,13}. The 1-year survival rate was 86.6\%, and median survival time was 66.6 months\textsuperscript{5}. As a result, most literature suggested that splenectomies are justified in the presence of metachronous isolated metastatic disease\textsuperscript{4,5,12–16}. Although splenectomies were performed in patients with synchronous splenic metastasis from colorectal carcinomas\textsuperscript{4,17}, one of the patients died of diffuse carcinomatosis after 1 year and the other had liver metastasis 6 months post-splenectomy. No definite conclusion about the benefits of splenectomy in synchronous splenic metastasis can be drawn, particularly because this disease is such a rare entity. Nevertheless, the growing frequency of colorectal carcinoma warrants the prospective collection in multiple centers with respect to the safety and risk-benefit ratio of splenectomy.

References