Pseudo-Meigs’ Syndrome Caused by Ovarian Metastasis from Colon Cancer: Report of a Case

TOMONORI OHSAWA1, HIDEYUKI ISHIDA1, HIROSHI NAKADA1, SHIGEISHA INOKUMA1, DAJYO HASHIMOTO1, HAJIME KURODA2, and SHINJI ITOYAMA2

Departments of 1Surgery and 2Pathology, Saitama Medical Center, Saitama Medical School, 1981 Kamoda, Kawagoe, Saitama 350-8550, Japan

Abstract
We report an extremely rare case of pseudo-Meigs’ syndrome caused by ovarian metastases from colon cancer, and review the literature on this unusual entity. A 41-year-old woman was admitted for investigation of abdominal fullness and dyspnea. Preoperative examinations revealed a huge pelvic tumor, adenocarcinoma of the sigmoid colon, marked ascites, and bilateral pleural effusion. Laparotomy confirmed that the huge mass was comprised of bilateral ovarian tumors. Resection of the sigmoid colon and bilateral oophorectomies were performed. Although short-term intrathoracic drainage was required, the hydrothorax and ascites rapidly resolved in the postoperative period. The patient died of disseminated liver and bone metastases 8 months after her operation; however, ascites and hydrothorax were not clinically noted until death. This and five other reported cases demonstrate that ovarian metastasis from colorectal cancer may occasionally cause pseudo-Meigs’ syndrome, and that resection of the ovarian lesions could improve the prognosis.

Key words Colon cancer · Pseudo-Meigs’ syndrome · Ovarian metastasis

Introduction
Pseudo-Meigs’ syndrome is now recognized as a condition characterized by ascites and hydrothorax, which is cured by removing the ovarian or pelvic tumor, with the exception of ovarian fibroma.1–4 However, few cases of gastrointestinal cancer manifesting with this syndrome have been reported.5 We report herein an unusual case of this syndrome caused by an ovarian metastasis from sigmoid colon cancer. A review of the literature follows this case report.

Case report
A 41-year-old Japanese woman was admitted to our hospital complaining of abdominal fullness and dyspnea. Her family history and medical history were unremarkable. On physical examination, a huge mass was palpable in the lower abdomen. Chest X-ray showed bilateral pleural effusion, and computed tomography and magnetic resonance imaging revealed an intrapelvic cystic mass, 20 × 16 cm in size, and an intra-abdominal fluid collection (Fig. 1a,b). Barium enema showed an apple-core sign in the sigmoid colon. Colonoscopy demonstrated an ulcerating tumor in the sigmoid colon, a biopsy of which confirmed moderately differentiated adenocarcinoma. Laboratory data on admission showed a low hemoglobin level (9.7 g/dl) and an elevated lactate dehydrogenase level (701 IU/l). The serum levels of carcinoembryonic antigen (CEA), carbohydrate antigen 19-9 (CA19-9), and carbohydrate antigen 125 (CA125) were also elevated: CEA, 27.1 ng/ml (cutoff: 6.7 ng/ml); CA19-9, 39 U/ml (cutoff: 37 U/ml); and CA125, 835 U/ml (cutoff: 35 U/ml). During preoperative examinations, the patient required repeated paracentesis for uncontrollable ascites, but cytological examination of the fluid was negative for malignancy. A laparotomy was performed based on the suspicion of colon cancer with ovarian metastasis or synchronous cancers of the colon and ovary. We drained 5,600 ml of serous ascites during the laparotomy. A tumor of the sigmoid colon macroscopically invaded the serosa, and a huge pelvic mass was found to contain bilateral ovarian tumors. Minute nodules of peritoneal dissemination were sparsely distributed over the peritoneal
We performed bilateral oophorectomies and resection of the sigmoid colon (Fig. 2). Because an increase in bilateral pleural effusion was observed on the day of laparotomy, trocar tubes were inserted into both thoraces and a total of 2600 ml serous fluid (right: 600 ml; left: 2000 ml) was collected (Fig. 3). The hydrothorax and ascites rapidly resolved in the early postoperative period, and the trocar tubes were removed on the seventh postoperative day. The patient was discharged on the 32nd postoperative day. Histological examination of the ovarian tumors revealed a moderately differentiated carcinoma compatible with metastasis from colon cancer (Fig. 4a,b).

Immunohistochemical staining with cytokeratin (CK) 7 and CK20 demonstrated that cancer cells of the ovaries were positive for CK20 and negative for CK7, confirming that the ovarian tumors were metastases from colon cancer. Histological examination revealed that the cancer cells of the primary lesion were exposed to the serosal surface. Metastasis was also found in the intermediate and paracolic lymph nodes. Despite postoperative chemotherapy consisting of 5-fluorouracil and leucovorin followed by irinotecan, the patient died from disseminated hepatic and bone metastases 9 months after her operation. There was no sign of ascites or hydrothorax again until just before she died.

Discussion

Meigs and Cass\textsuperscript{6} described a rare triad of ovarian fibroma/thecoma, ascites, and hydrothorax, in which cure was achieved by completely removing the benign tumor. This came to be known as Meigs’ syndrome.\textsuperscript{7} Pseudo-Meigs’ syndrome is now recognized as a condi-