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Peritoneal metastases from mucinous endocervical adenocarcinoma

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Introduction

Pseudomyxoma peritonei is a clinical condition characterized by mucinous tumors and mucinous ascites that accumulates in large volume and over time will interrupt gastrointestinal function. Pseudomyxoma peritonei most commonly arises from a mucinous neoplasm of the appendix (Sugarbaker et al., 1996). Also, occasionally this syndrome may arise from the colon or rectum, gallbladder, small intestine, ovarian teratoma, lung, breast, pancreas, fallopian tube, and urachus (Sugarbaker, 2012a). Described here are three patients presenting with mucinous peritoneal metastases arising from an adenocarcinoma of the endocervix. This cause of this rare condition is unclear; it may be caused by retrograde menstruation. Evaluation of these patients for cytoreductive surgery (CRS) and hyperthermic perioperative chemotherapy (HIPEC) at a peritoneal surface oncology treatment center early in the natural history of the disease is recommended.

Patient presentation 1

A 33 year old woman presented in May of 2011 with chief complaints of abdominal distention and pain. A past history of cone biopsy of the cervix in 2002 showed pre-cancerous cells with no invasive malignancy. CT of the chest, abdomen, and pelvis showed a large volume of intraabdominal fluid consistent with combined mucinous and serous ascites (Fig. 1). Laparoscopy was performed showing bilateral adnexal masses, copious mucinous fluid, and peritoneal metastases on the abdominal wall, the right hemidiaphragm, and greater omentum. Pathology showed mucinous adenocarcinoma and immunostains suggested a cervical origin with P16 and CK7 positive and CK20 negative.

Upper and lower gastrointestinal endoscopy was not revealing of a cancerous process. She underwent a 9-hour complete CRS with greater omentectomy, appendectomy, right upper quadrant peritonectomy, lesser omentectomy, pelvic peritonectomy, hysterectomy, and bilateral salpingo-oophorectomy (Sugarbaker, 2012b).

Pathology showed in-situ and invasive mucinous adenocarcinoma of the endocervix with metastases to ovaries, fallopian tubes, omentum, and peritoneum. The appendix was normal except for overlying extracellular mucin. She was treated with HIPEC and early postoperative intraperitoneal chemotherapy (EPIC) (Sugarbaker, 2012b). The patient was treated with a single cycle using cisplatin (50 mg/m^2) and doxorubicin (15 mg/m^2) by intraperitoneal administration at 42 °C. Continuous infusion intravenous ifosfamide was given over the 90 min of HIPEC. Fifteen minutes prior to infusion 2-mercaptoethane sulfonate NA (MESNA) at 260 mg/m^2 was given as a bolus. The MESNA was repeated at 4 and 8 h after initiation of the HIPEC. Early postoperative intraperitoneal chemotherapy (EPIC) with paclitaxel at 20 mg/m^2 in one liter of 1.5% dextrose peritoneal dialysis solution was used postoperative days one through five (Sugarbaker, 2012b). Systemic chemotherapy was given over five months using paclitaxel at 135 mg/m^2 administered over 24 h on day one plus cisplatin 50 mg/m^2 administered on day two. Treatment was every 21 days for six cycles.

She remains asymptomatic on 6 monthly CT follow-up at 3 years.

Patient presentation 2

In February of 2012, this 27 year old woman reported her first symptom as increasing inability to eat or drink. CT showed high jejunal obstruction, a pelvic mass thought to be an enlarged ovary, and ascites. Laparoscopy and dilatation and curettage with endocervical biopsy showed adenocarcinoma from an invasive endocervical primary cancer.

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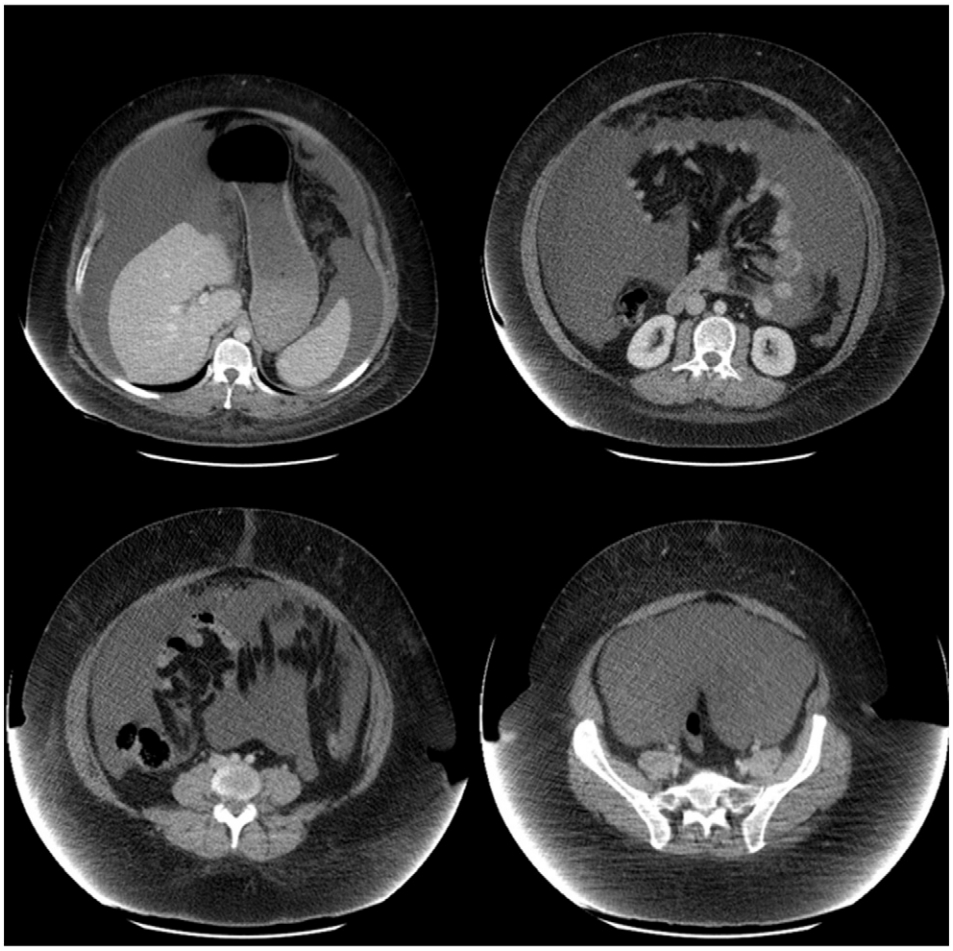

Fig. 1. Abdominal and pelvic CT on a patient with adenocarcinoma of the endocervix. Paracentesis resulted in the drainage of 10 l of ascites.

A jejunostomy was placed for nutritional support. Systemic carboplatin AUC 4–7.5 was given every 21 days together with paclitaxel 175 mg/m^2 also every 21 days. Treatment was for six cycles with good symptomatic benefit and a resumption of oral nutrition. In July of 2013, the patient again became unable to eat and recurrent high jejunal obstruction was confirmed. At this time she underwent palliative surgery to bypass jejunal and colonic obstructions. Greatly enlarged omentum and ovaries were resected (Fig. 2). HIPEC was used in an attempt to control debilitating ascites (Sugarbaker, 2012b). HIPEC used cisplatin (50 mg/m^2) and doxorubicin (15 mg/m^2) by intraperitoneal administration at 42 °C. Continuous infusion intravenous ifosfamide was given over the 90 min of HIPEC. Fifteen minutes prior to infusion 2-mercaptoethane sulfonate NA (MESNA) at 260 mg/m^2 was given as a bolus. The MESNA was repeated at 4 and 8 h after initiation of the HIPEC. Early postoperative intraperitoneal chemotherapy (EPIC) with paclitaxel at 20 mg/m^2 in one liter of 1.5% dextrose peritoneal dialysis solution was used postoperative days one through five (Sugarbaker, 2012b). All biopsies and resected specimens were compatible with endocervical adenocarcinoma. The left upper quadrant mass was not resected. She was not thought to be a candidate for further systemic chemotherapy. She died in October of 2013.

Patient presentation 3

This patient had Peutz–Jeghers syndrome and carried an STK-11 mutation. In January 2012 at age 44, she presented with vaginal discharge. A hysterectomy showed a well differentiated mucinous adenocarcinoma of the endocervix that fulfilled the criteria for minimal deviation adenocarcinoma ('adenoma malignum') (McCluggage, 2013). Mucinous lesions were noted on the peritoneal surfaces, and a biopsy showed metastatic mucinous adenocarcinoma that was morphologically similar to the cervical lesion. Immunohistochemistry showed expression of CK7 and CA125, but CK20 and CDX-2 were negative. Adjuvant treatments with cisplatin at 40 mg/m^2 for 5 weeks plus radiation therapy to 45 Gy were given.

In 2013 she presented with pelvic pain and radiological features of pseudomyxoma peritonei. There was significant respiratory compromise as a result of a pulmonary embolism combined with massive abdominal distention from ascites. It was decided to proceed to laparotomy following insertion of a vena cava filter and anticoagulation. Laparotomy released 20 l of watery ascitic fluid leading to improved ventilation. Nodules of mucinous tumor were found on the small bowel, on the under-surface of both diaphragms, in the paracolic gutters, on the jejunum and the terminal ileum, and there was a massive omental cake. Complete cytoreduction was not possible and a debulking procedure was performed, including total colectomy with end ileostomy. HIPEC with mitomycin C at 20 mg/m^2 at 42 °C for 90 min was administered to help alleviate further ascites accumulation. Histology of the tumor confirmed metastatic mucinous adenocarcinoma (Fig. 3).

Her postoperative course was complicated by further deep venous thromboses and she died on the 31st postoperative day.

Discussion

It is extremely uncommon for cervical cancer to be associated with peritoneal metastases. Gatalica, Foster, and Loggie reported on low-grade mucinous peritoneal metastases eight years after hysterectomy in a patient who had cervical adenocarcinoma (Gatalica et al., 2008).