Primary peritoneal malignant mixed müllerian tumor associated with colonic adenocarcinoma

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Summary

Background: Primary extragenital malignant mixed Müllerian tumors (MMMTs) are very rare neoplasms, with only 28 documented cases in the literature. Two cases coexisted with a colonic adenocarcinoma.

Case: We report on a primary peritoneal MMMT diagnosed shortly after resection of a colonic adenocarcinoma in an 85-year-old woman who presented with a large omental mass. Microscopic examination revealed a biphasic tumor with malignant carcinomatous and sarcomatous components, confirmed immunohistochemically, consistent with MMMT. Despite optimal debulking and uneventful postoperative recovery, the patient died of her disease shortly after surgery due to recurrent disseminated disease.

Conclusions: This is the third case in the literature of primary extragenital MMMT occurring in association with colonic adenocarcinoma. This coexistence may be incidental, but it may also imply a possible linkage between these two tumors.

Key words: Extragenital; Malignant mixed Müllerian tumor (MMMT); Secondary Müllerian system; Colonic adenocarcinoma.

Introduction

The most common site of malignant mixed Müllerian tumor (MMMT) is the uterine corpus, where it represents 2-3% of malignant neoplasms [1]. MMMTs are also well documented in the ovaries, where they account for less than 1% of malignant tumors with over 250 cases reported in the literature [2]. Approximately 30 cases of primary cervical MMMT have been reported in the literature [3]. Rare cases have been observed in the vagina [4] and fallopian tubes [5]. To our knowledge, only 28 cases of primary extragenital MMMT have been reported in the literature, most of them as single reports [6-8]. Two cases coexisted with colonic adenocarcinoma [7, 8]. Here we report on a case of primary peritoneal MMMT diagnosed shortly after resection of colonic adenocarcinoma.

Case Report

An 85-year-old, gravida 1, para 1, postmenopausal woman was admitted because of abdominal pain and distention. Her past medical history included sigmoidectomy for Aster-Coller Stage B2 sigmoid adenocarcinoma and bilateral salpingo-oophorectomy for bilateral ovarian serous cystadenofibromas 20 months prior to her admission. Her family history was unremarkable. Physical examination revealed an uncomfortable woman with a large mid abdominal non-mobile solid mass. Pelvic examination disclosed unremarkable external genitalia, cervix and uterus. Ultrasound examination and computerized tomography (CT) scanning demonstrated a large mid abdominal solid mass occupying the entire abdominal cavity.

At laparotomy, 2,000 ml of blood-stained ascitic fluid was drained from the peritoneal cavity. The uterus, bladder, sigmoid colon and the infracolic omentum were surrounded by extensive adhesions. The infracolic omentum was replaced by a large irregular solid tumor. The terminal ileum was entrapped within the omental tumor. Adhesiolysis, omentectomy, resection of the terminal ileum with ileo-ascending colon side-to-side anastomosis, and total abdominal hysterectomy were performed. No visible residual tumor was left at the end of surgery. Postoperative recovery was uneventful. The patient, however, died of disease three months after surgery due to recurrent disseminated disease.

Pathological findings

The specimen received in the pathology department consisted of a segment of small bowel measuring 32 cm in length, with a tumor measuring 21 x 13.5 x 6 cm adherent to its serosal (peritoneal) surface. The bowel's mucosal surface was intact. A separate tumor mass measuring 12 x 10 x 6 cm was also received. Both tumor masses had a lobular external surface and a solid tan-yellow cut surface with foci of hemorrhage and necrosis.

Upon microscopic examination the tumor was adherent to the bowel's peritoneal surface but did not infiltrate the bowel wall. The histology was that of a biphasic tumor with carcinomatous and sarcomatous components (Figure 1). The epithelial component varied from papillary serous to endometrioid carcinoma and was diffusely and strongly reactive for cytokeratin (Biomeda, Foster City, CA, USA, dilution 1:100). It was negative for vimentin (Zymed, San-Francisco, CA, USA, dilution 1:100), smooth muscle actin (Sigma, Rehovot, Israel, dilution 1:4000), desmin (Zymed, dilution 1:50), and S-100 protein (Dako, Glostrup, Denmark, dilution 1:2000).

The mesenchymal component consisted of fascicular proliferation of pleomorphic cells containing spindle to oval hyperchromatic nuclei and relatively abundant eosinophilic fibrillary cytoplasm. The morphology was reminiscent of high-grade endometrial stromal sarcoma. Scattered tumor giant cells with bizarre nuclei were noted. The tumor cells in these areas were diffusely and strongly positive for vimentin, focally positive for desmin and negative for smooth muscle actin, S-100 protein, and total cytokeratin. Many foci of chondrosarcoma were also present, and they were immunoreactive for vimentin and S-100 protein.

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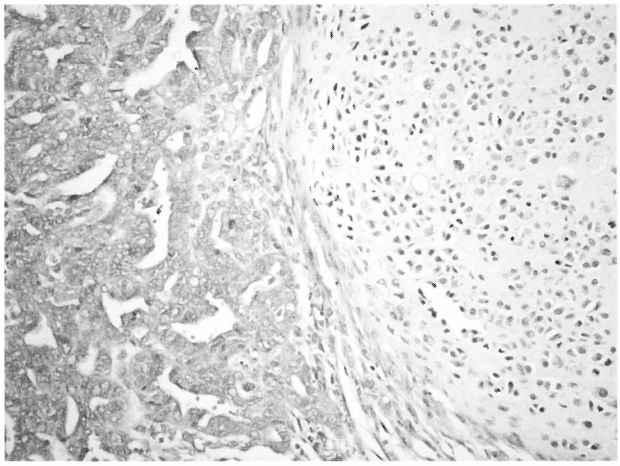

Figure 1. — Serous carcinoma (left field) adjacent to chondrosarcoma (right field). (Hematoxylin & eosin stain, original magnification x 200).

Numerous mitotic figures including atypical forms were noted both in the carcinomatous and sarcomatous components. Many areas of tumor cell necrosis were identified.

The uterus showed no evidence of malignancy.

The ascitic fluid contained several groups of exfoliated malignant epithelial cells consistent with the carcinomatous component of MMMT.

Discussion

Primary peritoneal MMMTs, similar to their more frequent counterparts in the uterus, ovaries, fallopian tubes and cervix, are rare neoplasms.

Many benign and malignant lesions of the female genital tract are encountered in the peritoneal surface [9], and their histogenesis still remains unclear. The origin of extragenital MMMTs is best explained by the metaplastic theory, which is based on the existence of a secondary Müllerian system consisting of peritoneal epithelium and subepithelial pluripotential mesenchymal cells, as defined by Lauchlan [10]. According to this hypothesis, the peritoneal epithelium and subepithelial pluripotential mesenchymal cells derive embriologically from the celomic cavity and are capable of Müllerian differentiation. The Lauchlan theory provides an explanation for various primary peritoneal Müllerian-type benign and malignant lesions.

Extragenital MMMTs occur typically in elderly postmenopausal women. Abdominal pain and distension are the most frequent clinical symptoms, and the prognosis is gloomy despite the various treatments that have been attempted [7, 8]. Similarly to their genital counterparts, extragenital MMMTs can be homologous or heterologous types, and the heterologous elements consist most often of chondrosarcoma or rhabdomyosarcoma [8]. There is no apparent relationship between the outcome and the presence or absence of a heterologous component in extragenital MMMT, as has been shown previously in uterine and ovarian MMMTs [1].

Interestingly, in our patient as well as in previous reports [7, 8], extragenital MMMTs occurred in association with colonic adenocarcinoma. The latter was an incidental postmortem finding in the report of El-Jabbour *et al.* [7], whereas it led to surgery and to the discovery of a MMMT in one of the patients reported by Garamvoelgyi *et al.* [8]. In our patient the colonic adenocarcinoma occurred 20 months prior to the presentation of the peritoneal MMMT. The coexistence of an extragenital MMMT with colonic adenocarcinoma may simply be related to the fact that adenocarcinoma of the colon is a common tumor in this age group. On the other hand, the occurrence of the very rare primary peritoneal MMMT in association with colonic adenocarcinoma in three out of 29 patients (approximately 10%) may imply a possible linkage between these two tumors, a subject that should be investigated in future studies.

Conclusion

Only 28 cases of primary extragenital MMMTs have been reported in the literature, two of them in association with adenocarcinoma of the colon. The coexistence of colonic adenocarcinoma and extragenital MMMT may be incidental but this occurrence in three out of 29 patients (approximately 10%) may imply a possible linkage between these two tumors. We believe that primary peritoneal MMMTs arise from the secondary Müllerian system by a process of metaplasia.

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