Difficult Diagnosis of Peritoneal Serous Papillary Carcinoma in a 63-year-old Woman: A Case Report

Banri TSUDA[*1], Hiroshi KAJIWARA[*2], Naoki SAKOTA[*3], Shizuko AMATSU[*4], Akira TANAKA[*5] and Masae IKEDA[*4]

[*1]*Department of Breast and Endocrine Surgery, Tokai University School of Medicine*
[*2]*Department of Pathology, Tokai University School of Medicine*
[*3]*Department of Emergency and Critical Care Medicine, Tokai University School of Medicine*
[*4]*Department of Gynecology, Tokai University School of Medicine*
[*5]*Department of Surgery, Tokai University School of Medicine*

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Background: Peritoneal serous papillary carcinoma (PSPC) is a rare disease. It is clinically and histologically similar to progressive ovarian serous adenocarcinoma and involves normal-sized ovaries, making it challenging to diagnose. In this report, we describe a case of peritoneal serous papillary carcinoma that was difficult to identify and how we made a correct diagnosis in order to begin a timely course of treatment.
Case presentation: A 63-year-old woman with chief complaints of dizziness and abdominal pain was examined, but showed no particular abnormality. Class III cytology of the endometrium was detected through magnetic resonance imaging and a laparotomy was performed on suspicion of endometrial cancer. The patient was finally diagnosed with peritoneal serous papillary carcinoma and was treated with surgical resection and the standard indicated course of chemotherapy.
Conclusions: The diagnosis and treatment of peritoneal serous papillary carcinoma may be delayed or may not be performed unless Class III findings are detected through uterine mucosal cytology before surgery. Surgeons should not hesitate to perform laparotomy when necessary to identify and appropriately treat patients, even if abnormalities are not detected in the preoperative examination.

Key words: Peritoneal serous papillary carcinoma, unknown primary cancer, gynecological cancer, ovarian cancer

INTRODUCTION

Peritoneal serous papillary carcinoma (PSPC) is a rare disease that occurs mainly in postmenopausal women. Macroscopically, the ovary appears virtually normal in cases of PSPC, but with presence of peritoneal disseminated lesions [1]. This makes its clinical diagnosis difficult. Most cases are identified through laparotomy or autopsy.

The carcinoma tissues in this condition resemble those of serous adenocarcinoma of the ovary; however, no primary tumor is found in the ovary, and the disseminated lesion on the peritoneal surface shows a conspicuous prognosis; this form of cancer is dangerous [2]. Swerdlow first reported peritoneal primary serous papillary adenocarcinoma in 1959 [3]. In 1993, the Gynecologic Oncology Group established the following diagnostic criteria for this disease: normal, large, or benign bilateral ovaries; presence of extra-ovarian lesions of ovarian origin; absence of ovarian lesions (histologically) or ovarian invasion of ≤ 5 × 5 mm; and presence of serous papillary adenocarcinoma in the peritoneum [2].

CASE PRESENTATION

A 63-year-old woman presented to our hospital with dizziness and abdominal pain that had persisted for the last month. Ultrasound indicated the presence of a large amount of ascites in the pelvic floor without any abnormality of the uterus or ovary. However, enhanced computed tomography (CT) revealed a moderate amount of ascites. In addition, thickening of the large intestinal wall in the peritoneal cavity was suspected (Fig. 1), which was consistent with the tenderness that the patient experienced near the McBurney's point in the right lower abdomen. Although a slight rebound was detected, no hardness was observed. Moreover, the presence of bowel sounds was noted. During rectal examination, no abdominal adhesion or obvious abnormality was found. Chest radiography revealed normal findings. The patient's laboratory findings showed normal results, including normal tumor marker levels (Table). She showed no inflammatory response, her white blood cell count was 7500/μL, C-reactive protein level was 0.16 mg/dL, and her blood urea nitrogen (UN) did not increase beyond 15 mg/dL. After these tests, the patient was admitted to our hospital with

Banri TSUDA, Department of Breast and Endocrine Surgery, Tokai University School of Medicine, 143 Shimokasuya, Isehara, Kanagawa 259-1193, Japan
Tel: +81-463-93-1121 Fax: +81-463-95-8601 E-mail: banri@is.icc.u-tokai.ac.jp

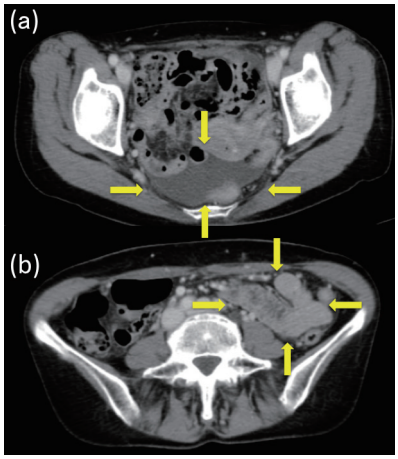

Fig. 1 Abdominal computed tomography showing a moderate quantity of ascites with suspicion of wall thickening (shown by an arrow).

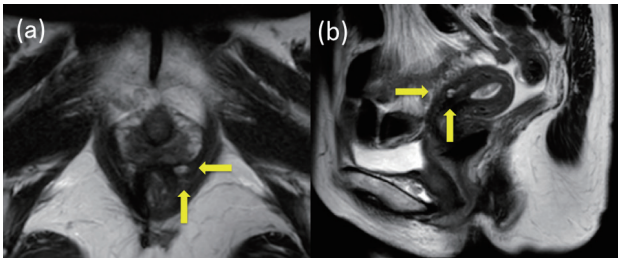

Fig. 2 Magnetic resonance imaging (T2W1) revealing a T2 extended lesion in the endometrium of the uterine body.

Table Laboratory findings

WBC	6900	/ul	GOT	17	U/L	CEA	2.6	ng/ml
Seg	80.4	%	GPT	12	U/L	CA125	17.7	U/ml
Lympho	16.6	%	LDH	171	U/L	CA15-3	22.7	U/ml
Mono	2.6	%	ALP	211	U/L	CA19-9	19.6	U/ml
Eosino	0.1	%	r-GTP	13	U/L	SCC	0.5	ng/ml
Baso	0.3	%	amilase	85	U/L			
RBC	422×10^6	%	Cr	0.58	mg/dl			
Hb	12.2	g/dl	BUN	7	mg/dl			
PLT	29.3×10^4	/ul	Glu	102	mg/dl			
			T-Cho	207	mg/dl			
APTT	33 (25-36)	sec	Na	142	mg/dl			
PT	13.6 (9.3-13.8)	sec	K	3.9	mg/dl			
			Cl	102	mg/dl			
			T-Bil	0.5	mg/dl			
			CRP	0.22	mg/dl			

suspected colorectal cancer.

Although the patient's father had succumbed to colon cancer, her own medical history was unremarkable. Examination of the patient's records at our hospital disclosed the following: height, 152 cm; weight, 39 kg; body temperature, 36.5℃; pulse rate, 80 beats/min; arterial blood pressure, 112/68 mmHg; and no anemia or jaundice.

Although total colonoscopy showed no abnormality in the colon, extramural adhesions were observed in the sigmoid colon and the transverse colon. The bending angle was small and impossible to pass unless an upper gastrointestinal scope was used, during which the patient experienced severe pain. These findings indicated peritoneal dissemination. Upper gastrointestinal endoscopy indicated surface gastritis, but not gastric cancer. A biopsy showed class I. The gynecology department was consulted to exclude the possibility of gynecologic cancer. Internal examination showed no abnormality or pain, and the paravalent weave was free.

Gynecologic ultrasound examination showed that the size of the uterus was 43 mm, and that of the intima was 2 mm. Ascitic fluid was observed around the left ovary, but no obvious bilateral ovarian tumor was noted. Cytology of the uterine vagina revealed a few atypical high-grade squamous cells of uncertain significance. Similarly, in the cervix, atypical high-grade squamous cells of uncertain significance were observed. Although there was no apparent heteromorphism in transvaginal and endometrial gland cells, parabasal heterotypic cells seemed disseminated; consequently, the patient was confirmed to have Class III cytology.

Pelvic enhanced magnetic resonance imaging (MRI) showed a lesion measuring 12×5 mm and a pale T2 extension in the endometrium of the uterine body (Fig. 2). Diffusion reduction and abnormal contrast enhancement were not observed. Infiltration into the muscle layer was unclear. No infiltration into the cervical stroma was observed, which indicated stage IA cancer. No remarkable findings were observed in the pelvic lymph nodes. Ascitic fluid was noted, but none of the findings indicated disseminated nodules. Therefore, endometrial cancer was suspected, and laparotomy was performed.

Upon incision in the midline of the lower abdomen, a cake-shaped tumor was detected in the transverse colon just above the wound and slightly towards the left on the omentum (Fig. 3). Intraoperative rapid cytology

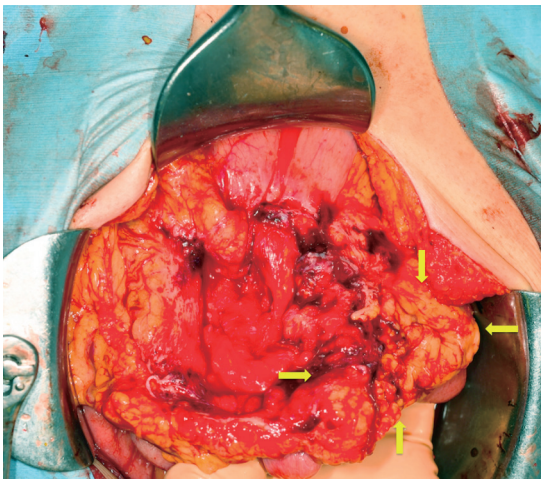

Fig. 3 Findings during laparotomy. The peritoneum was clumped and formed a tumor, the so-called "omentum cake" (arrows). The tumor had invaded the stomach, transverse colon, ascending colon, and abdominal wall.

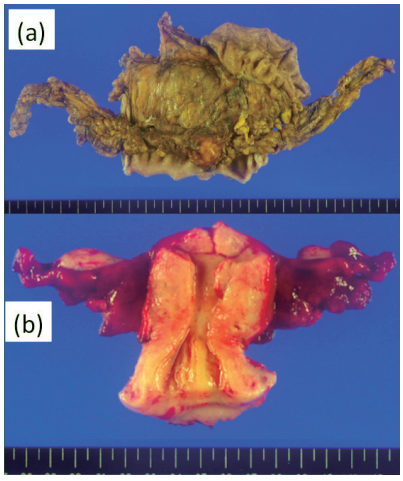

Fig. 4 Image of the resected specimen. (a) Resected specimen of the peritoneum and stomach, transverse colon, ascending colon, and abdominal wall. (b) Resected specimens of the uterus and ovary. No abnormal findings were observed macroscopically.

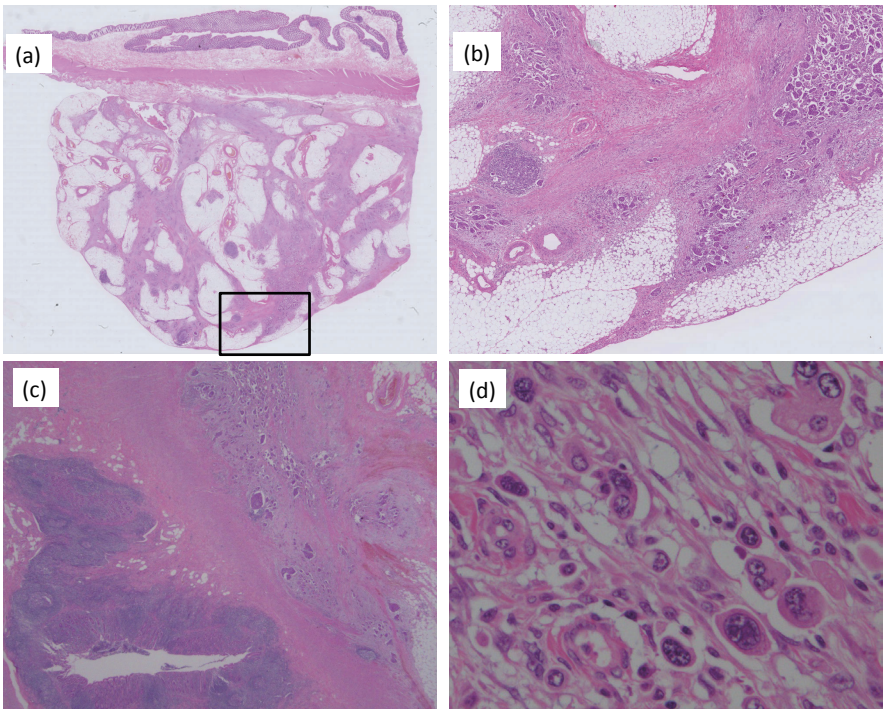

Fig. 5 Pathological findings (a, b) The tumor is located at gastric serosa and subserosa (a. low power view, b. high power view in the square of fig.(a)). (c) The tumor is also found at cecal subserosa. (d) The tumor cells reveals preomorphic shaped and posses hyperchromatic irregular shaped nuclei.

of ascites revealed Class V adenocarcinoma. Therefore, transverse colon resection, partial gastrectomy, and resection of the ileocecal area were performed. The uterus and ovary were excised, and there were no macroscopic findings of gynecologic cancer (Fig. 4). Since the tumor was suspected to have partly invaded the abdominal wall, the peritoneum that showed induration was also excised. No residual macroscopic cancer was observed, and the origin of the primary lesion was unclear.

Pathological examination showed that the tumor was located at the omentum and gastric and cecal serosa and subserosa. However, digestive mucosa was free of tumor (Fig.5a-c). The tumor cells reveals marked pleomorphism and possess hyperchromatic irregular shaped nuclei (Fig 5d). In the immunostaining, the tumor cells were positive for p53 (Fig. 6b), WT-1 (Fig. 6c), but negative for calretinin [mesothelial marker] (Fig. 6d), cdx2 [intestinal marker] (Fig. 6e) and HER2 (Fig. 6f). The expression patterns are compatible with gynecological serous carcinoma. No tumorous lesions were observed in the uterus/bilateral attachment phase. Thus, a final diagnosis of peritoneal cancer (peritoneal primary serous papillary carcinoma) was made. In bilateral appendages of the uterus, only a few tumor cells were found on the serosal side of the ovi-

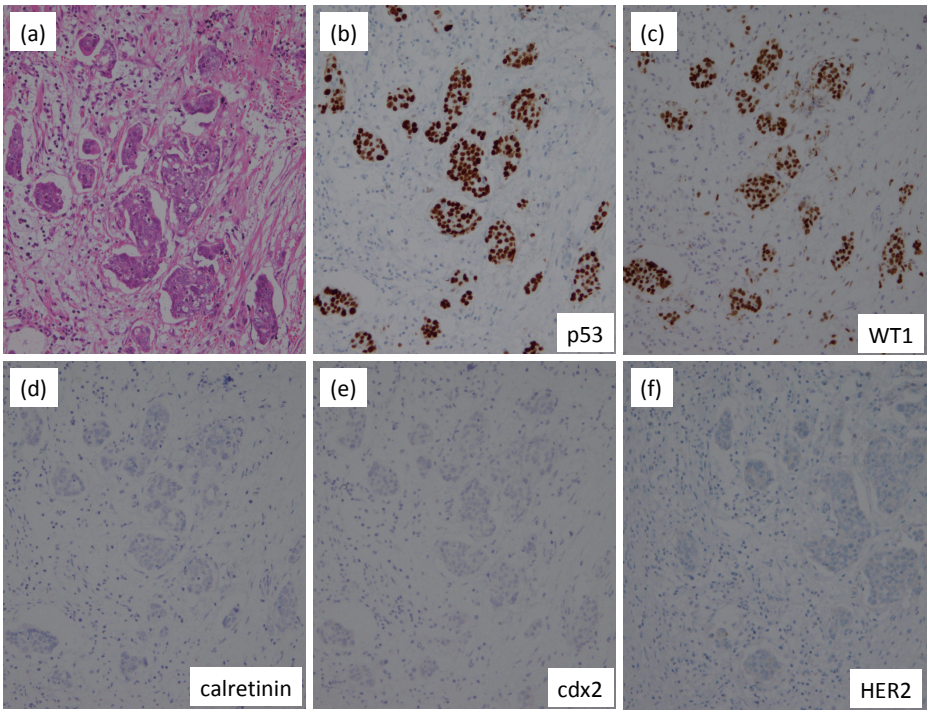

Fig. 6 Immunohistochemical findings of the tumor cells at the cecal subserosa. The tumor cells were positive for p53(b) and WT1(c), but negative for calretinin(d), cdx(e) and HER2(f).

duct. A lesion was found attached to the inner wall of the uterus, and a polypoid lesion composed of sparse endometrial glands and fibrous interstitia with poor heteromorphism was diagnosed as endometrial polyp. Neoplastic lesions were not found in the endometrium and ovary.

DISCUSSION

The present patient was initially suspected of unknown primary cancer, and later diagnosed with peritoneal primary serous papillary adenocarcinoma. Peritoneal primary serous papillary adenocarcinoma is similar to ovarian serous adenocarcinoma: both conditions involve a small nucleus with pronounced nuclear atypia of the tumor cells present in papillary structures, with a narrow stroma. In addition, the tumor interstitium frequently shows the presence of a psammoma body [4], which was also observed in the current case.

In a previous study, computed tomography detected 70%–80% of ascites and 40% of pleural effusion [5]. If Class V had been detected in ascites cytology, the possibility of peritoneal cancer would have been greatly considered before surgery, but in this case, retrospective CT and MRI showed moderate ascites and no percutaneous ascitic puncturable amount was pooled.

In cases of peritoneal primary serous papillary carcinoma, although a nodular lesion of the omentum/peritoneum is observed, the bilateral ovaries are often normal [6]. In this case, the initial site of thickening of the large intestine was retrospective with thickening of the omentum and peritoneum. Similar to ovarian cancer, peritoneal primary serous papillary carcinoma shows a high positive rate for the tumor marker CA-125, which is a mucous antigen produced in mesothelial cells and cells derived from Mullerian duct epithelium, and is useful for diagnosis and follow-up [7, 8]. However, in this case, CA-125 in blood was normal. Therefore, postoperative CA-125 would not seem to be a good predictor of recurrence after surgery. Tumor resection is performed to the maximum extent possible, and chemotherapy is often administered after histopathological diagnosis for peritoneal primary serous papillary adenocarcinoma [9].

As mentioned above, unlike in previous cases, even when the factors predictive of peritoneal primary serous papillary carcinoma before surgery were considered retrospectively, none of them were applicable. This is considered to be the limit in the diagnosis of peritoneal serous papillary carcinoma. Suspicion of endometrial cancer after MRI that prompted surgery in this case, turned out to be an endometrial polyp diagnosed as Class III in endometrial cytology. Although colonoscopy performed by an adept gastroenterologist revealed no abnormalities on the mucous membrane surface, the results differed upon reviewing the footage of the procedure.

The standard chemotherapy for PSPC is Taxotere and cyclophosphamide (TC) therapy[10], and in this case six courses of post-operative TC therapy were administered.

Many studies have reported a poor prognosis in ovarian serous adenocarcinoma with peritoneal seeding [10], and the mean survival time is 17–24 months [11, 12]. However, cases of long-term survival and remission resulting from appropriate treatment have been reported. Follow-up examinations of the current case have not revealed any metastatic recurrence 10 months after the operation.

CONCLUSIONS

Despite the absence of mucosal surface abnormality and general symptoms of peritoneal cancer after colonoscopy examinations, laparotomy is warranted in cases of conflicting results between imaging procedures and diagnosis through physical examinations, since timely intervention can lead to early treatment. In addition, because of its rarity, increased rates of diagnosis can add to understanding of this cancer's etiology and pathogenesis.

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