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Case Reports

Ovarian large cell neuroendocrine carcinoma in the youngest woman

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Summary

Large cell neuroendocrine carcinoma (LCNC) of the ovary is a rare tumor in gynecologic oncologic field. An 18-year-old woman presented with abdominal distention and a pelvic mass measuring ten cm in diameter, who previously underwent laparoscopic ovarian cystectomy due to large borderline mucinous ovarian neoplasm 18 months prior. A debulking operation was optimally performed, which included total abdominal hysterectomy with bilateral salpingo-oophorectomy, bilateral pelvic lymph node dissection, bilateral para-aortic lymph node dissection, omentectomy, optimal debulking of gastrohepatic mass and subdiaphragmatic mass, and pelvic peritonectomy. Despite adjuvant chemotherapy with paclitaxel and carboplatin, the patient died of progressive disease seven months after surgery. The authors report the youngest case of LCNC of the ovary, that failed chemotherapy and had the previous history of the conservative surgical treatment due to mucinous borderline tumor.

Key words: Large cell neuroendocrine carcinoma; Ovary; Rare tumor.

Introduction

Large cell neuroendocrine carcinoma (LCNC) of the ovary is an extremely rare tumor in gynecologic oncologic field. This entity was recently included in the latest WHO classification of primary ovarian tumors [1]. Since 1991, about 35 cases have been reported in the literature and most of these cases were associated with ovarian surface epithelial neoplasm [2-15]. There were few data in proper treatment and prognosis after surgical management. To establish a proper treatment strategy, more data of this rare tumor must be accumulated. Therefore, the authors report the youngest patient with LCNS, who had history of previous laparoscopic ovarian cystectomy due to mucinous borderline tumor with follow-up loss of about 1.5 years. The patient with multiple abdominal metastases died of rapid progression of the tumor, despite optimal debulking operation and adjuvant chemotherapy.

Case Report

An 18-year-old woman presented with abdominal distension. She had a past surgical history of a laparoscopic cystectomy of the right ovarian mucinous borderline tumor at other tertiary hospital 18 months prior. Abdomino-pelvic computed tomography (APCT) showed a ten-cm lobulated complex mass in the right ovary with multiple peritoneal metastases. Positron emission tomography–computed tomography (PET-CT) showed a large, irregular matted hypermetabolic lesion in the pelvis consisting in peritoneal seeding with a small amount of malignant ascites (Figures 1A-D). Extra-abdominopelvic metastasis was negative. Serum CA 125 and CA 19-9 was 199 U/ml (normal ≤ 35) and 76.9 U/ml (normal ≤ 37), respectively. Under the impression of ovarian malignancy, an explolaparotomy was planned and performed. After revealing poorly differentiated carcinoma in the frozen biopsy, the optimal debulking operation was performed, which included total abdominal hysterectomy with bilateral salpingo-oophorectomy with bilateral pelvic lymph node dissection, para-aortic lymph node dissection, total omentectomy, gastrohepatic mass excision, diaphragmatic mass excision, and pelvic peritonectomy. There were no complications during the immediate postoperative period. Permanent pathologic reports showed ovarian large cell neuroendocrine carcinoma with focal mucinous carcinoma (Figures 1E-G), which involved the gastrohepatic mass, diaphragm, posterior cul de-sec, bladder wall serosa, pararectum, and omentum without lymph node metastasis.

The patient received adjuvant chemotherapy with paclitaxel and carboplatin 20 days after the operation. Despite three courses of chemotherapy, APCT showed a very rapid progression of the disease: multiple progressive implants in the left upper quadrant and left parabolic gutter, a large presacral retroperitoneal metastatic lesion, and a multiple low attenuating hepatic lesion. The chemotherapy regimen was changed into topotecan. The changed chemotherapy could not stop the speed up of the disease progression into numerous metastatic lesions in the liver, presacral area, peritoneal site, and both ureters. One month later, the patient died.

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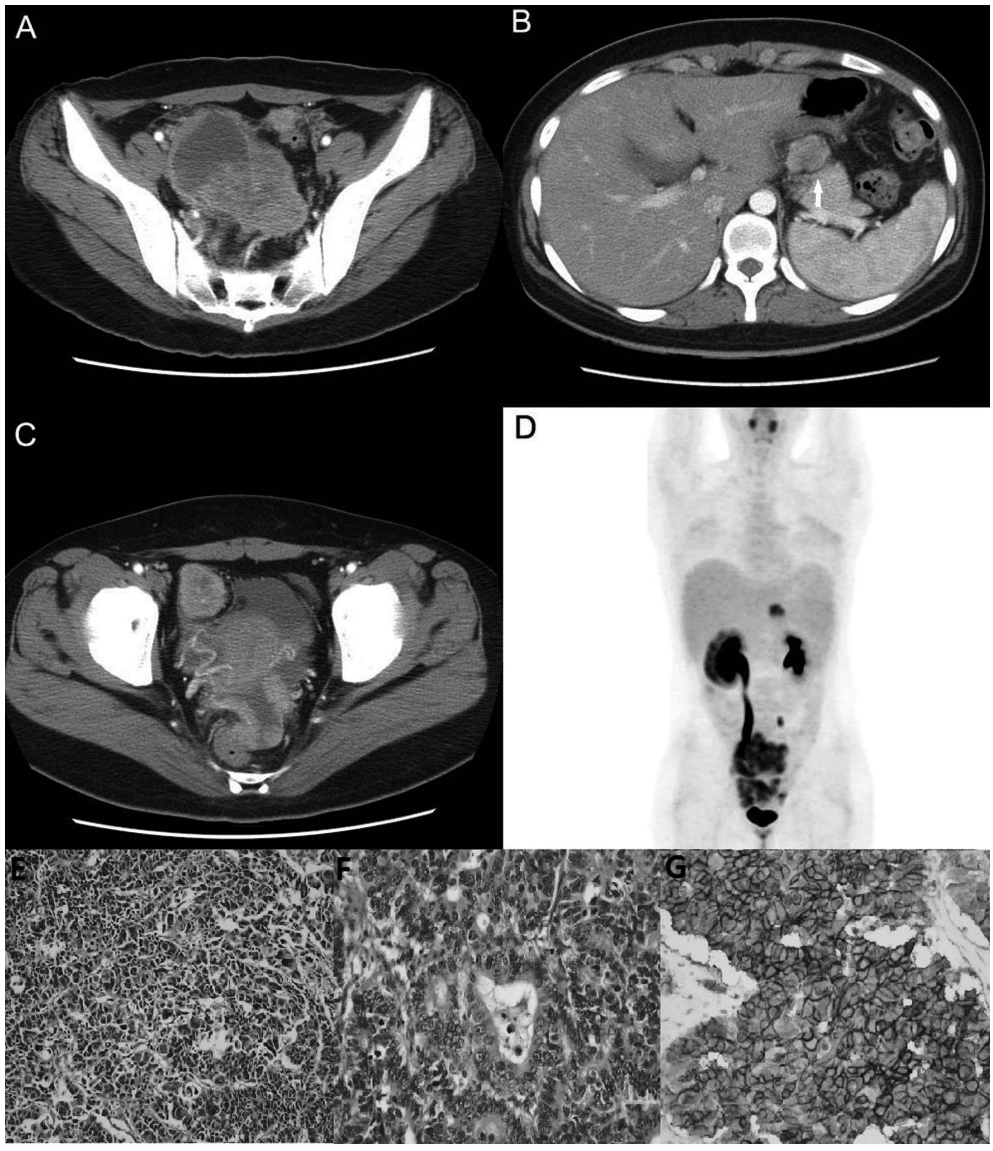

Figure 1. — Imaging findings on APCT and PET-CT and histopathologic findings. A: A circa ten-cm lobulated recurred or malignant complex mass at right adenxa. B: The white arrow indicates a gastrohepatic mass. C: Moderate lobulated Cul-de sac peritoneal thickening; multiple peritoneal nodules. D: PET-CT showed large pelvic and presacral seeding mass (max SUV= 7.0); peritoneal seedings in bilateral subphrenic region, liver fissure, both paracolic gutter, and mesenteric implantes (max SUV = 3.5). E: Sections showing large pleomorphic cells in solid sheets and cords (H&E, ×400). F: Focally mucinous adenocarcinma is noted (H&E, ×400). G: The tumor cells reveal positive reactivity for CD56, which is a neuroendocrine marker (CD56 ×400).

Discussion

Most cases of ovarian LCNC, an extremely rare tumor, have been reported to be associated with ovarian surface epithelial neoplasm, especially with mucinous tumor (61.1%); Among 35 cases in the literature including the current case, there were 22 cases of mucinous (61.1%), four cases of endometrioid (11.1%), four cases of teratomas (11.1%), serous case in two cases, and three in other cases [2-18]. The age range in the previous reported 35 cases was 22–73 years at primary operation. The current case showed the youngest patient of 18 years of age. The youngest age of the disease in the present case is meaningful in understanding the wider spectrum of disease onset time.

Most of these patients presented with Stage I disease (16 cases/35 cases), in which the tumors were confined to one ovary, and received adjuvant chemotherapy and complete salpingo-oophorectomy with or without fertility preservation. However, in the present case, the adolescent patient received cystectomy with preservation of involved normal ovarian tissues via laparoscopy at about16 years of age. The conventional laparoscopic ovarian cystectomy of large mucinous borderline tumor has some limitations, which include possibility of incomplete removal of the tumor and iatrogenic rupture and spillage of the cystic tumor during operation.

LCNC of the ovary associated with mucinous borderline malignancy is the most aggressive tumor with high mortality despite extensive surgery and adjuvant chemotherapy. In most cases, the extent of surgery was total abdominal hysterectomy with bilateral salpingo-oophorectomy with or without omentectomy and the Stage was I. Despite early Stage I, most patients died of the disease within one year after the operation. Twenty-nine of all 35

patients with LCNC received adjuvant chemotherapy, and their chemotherapy regimens were reported in 12 cases of these 29 patients. Most cases received chemotherapy with paclitaxel and carboplatin but the results were poor: mean dead of disease [DOD] = 9.7 months. Also adjuvant chemotherapy with paclitaxel and platinum, or alkylating agent and platinum did not alter the course of the disease progression [2-18].

In conclusion, this lack of standard treatment for extremely rare tumor, ovarian LCNC, has made it difficult to design optimal management strategies. Therefore, it is important for the disease prognosis that a role of surgical management be found with a proper strategy for adjuvant treatment.

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