Primary ovarian small cell carcinoma of pulmonary type with enlarged paraaortic lymph node masses: a case report and review of the literature

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Summary

Introduction: Small cell carcinoma of the ovary of pulmonary type, is a rare, aggressive tumour with poor prognosis and its optimal management is unclear. *Case presentation:* A 55-year-old Caucasian woman presented with abdominal discomfort and left lumbar pain within a three-week period. At exploratory laparotomy, a 8 cm solid cystic mass of the left ovary was found infiltrating the sigmoid colon, and a bulky mass (11 x 7 x 4 cm) in the left paraaortic infrarenal region. Histopathological features resembling small cell carcinoma of the lungs and positive immunohistochemical stains provided a definite diagnosis of IIIC ovarian small cell carcinoma of pulmonary type. After six cycles chemotherapy with carboplatin and etoposide, the patient is still alive at 21 months from initial diagnosis. *Discussion:* In this case, the absence of peritoneal involvement and the extensive paraaortic adenopathy is suggestive of a different pattern of spread of this rare tumour. Optimal treatment seems to be radical primary debulking surgery resulting in no residual disease, maximizing the effect of adjuvant chemotherapy for this biological aggressive tumour.

Key words: Ovarian small cell carcinoma pulmonary type; Debulking surgery.

Introduction

Primary ovarian small cell carcinoma (OSCC) is a rare and highly aggressive neoplasm with poor prognosis, constituting about 1% of all ovarian neoplasms. Up to 5% of all small cell carcinomas (SCCs) arise in extrapulmonary sites and SCCs of female genital tract represent less than 2% of all gynaecological malignancies [1, 2].

The histogenisis of these tumours is unclear. According to the World Health Organization (WHO) classification, OSSC is categorised in the group of miscellaneous tumours that is further divided in the hypercalcaemic type and in the extremely rare pulmonary type [3]. Up to date, approximately 20 cases of OSCC have been reported (Table 1) in the literature [4-13]. Due to limited experience on the pattern of spread and the management and outcome of this rare tumour, there is no concensus on optimal treatment. We present a case of OSCC from our hospital to pool our experience with previous reports in order to improve the management of patients with OSCC.

Case Report

A 55-year-old Caucasian woman presented to our department with abdominal discomfort and left lumbar pain. On physical examination, a left firm adnexal mass was found. Transvaginal ultrasound revealed a multiloculated predominantly solid mass with smaller cystic components at the periphery of the left ovary, measuring 8 x 7 x 4 cm suggestive of an ovarian neoplasm. Magnetic resonance imaging (MRI) of the abdomen showed dense adherence of the left ovarian tumour to the sigmoid colon, as well as bulky left paraaortic adenopathy, 11 x 7 x 4 cm in size, adjacent to the infrarenal region. All blood tests, serum calcium level and tumour markers were in the normal range except CA-125 which was slightly raised to 82.19 U/ml.

During exploratory laparotomy, a solid pale-gray mass 8 x 5 x 3 cm of the left adnexa was found firmly adjacent to the sigmoid colon with no other obvious metastatic peritoneal implants. Exploration of the upper abdomen appeared grossly normal. Exposure of the retroperitoneum was carried out to identify the paraaortic adenopathy. Frozen sections of the left ovarian mass and the paraaortic adenopathy were inconclusive but suggestive of an undifferentiated ovarian carcinoma. Subsequently, the patient underwent debulking surgery including hysterectomy, salpingo-oophorectomy, infracolic omentectomy, sigmoidectomy and extensive pelvic plus paraaortic lymphadenectomy. The assistance of a vascular surgeon was required because the lymph node mass was densely adherent to the undersurface of the left renal artery and vein. The operation resulted in complete removal of the adenopathy with no residual disease.

Pathology examination (Figure 1) revealed a tumour with microscopic features similar to small cell carcinoma of the lung (A). Immunohistochemical stains showed that the tumour cells were diffusely positive for neuron specific enolase (B), chromogranin (C) and synaptophysin (D). Therefore, an unexpected diagnosis of OSCC was made.

The postoperative course was uneventful and four weeks following debulking surgery, the patient received six cycles of adjuvant chemothery with carboplatin (AUC-6) and etoposide (100 mg/m^2). She is on regular follow-up and 21 months from the initial diagnosis remains in remission.

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Table 1. — *Clinopathological features of ovarian small cell carcinoma of pulmonary type.*

Authors	Age	Stage	Site/Size	Surface-epithelial	Operation	Postoperative therapy	Outcome
Eichhorn	62	Ia	R/21.5	Benign Brenner tumor	RSO	none	DOD, 4 m
et al.	59	Ic	R/17	Benign Brenner tumor	TAH, RSO	UKN	LTF
	55	Ia	L/26	Endometrioid cancer	TAH, BSO	recent case	recent
	28	Ic	L/20	Pure	TAH, BSO, OMT, APP	UKN	AWD, 4 m
	85	IIb	L/13.5 R/4.5	Endometrioid cancer Adenofibroma	BSO	none	DOD, 1 m
	76	IIIb	R/UKN L/UKN	Pure	BSO subtotal	agents UKN	DOD, 12 m
	50	IIIb	R/UKN L/UKN		LSO subtotal	UKN	DOD UKN
	72	IIIb	L/4.5	Endometrioid cancer	TAH, BSO OMT	cisplatin cyclophosphamide	DOD, 12 m
	64	IIIb	R/5.5 L/4.5	Pure	TAH, BSO, OMT, APP, COL, LYM	cisplatin cyclophosphamide doxorubicin	AWD, 8 m
	49	IIIb	L/16	Pure	LSO, COL LYM	cyclophosphamide cisplatin, doxorubicin methotrexate, 5-fluorouracil	DOD, 13 m
	46	IIIc	R/20 L/9.5	Squamous Differentiation	TAH, BSO, LYM	cisplatin cyclophosphamide doxorubicin, etoposide vincristine	ANED, 90 m
Khurana *et al.*	22	Ia	R/21	Mucinous borderline Mucinous adenoca	RSO, APP	carboplatin cyclophosphamide	DOD, 3 m
Fukunaga *et al.*	64	Ia	L/14	Mucinous borderline Endometrioid cancer	TAH, BSO, OMT, LYM	cyclophoshamide cisplatinum	DOD, 10 m
Lim *et al.*	28	IV	L/28	Malignant cystic Teratoma	TAH, BSO	cisplatin, etoposide bleomycin	ANED, 34 m
Mebis *et al.*	54	IIIc	L/UKN	Endometrioid cancer	TAH, BSO, OMT	cisplatin, ifosfamide etoposide	DOD, 14 m
Lo *et al.*	16	IIIa	L/9.5	Pure	BSO,TAH OMT	vinblastine, cisplatin cyclophosphamide, bleomycin, doxorubicin etoposide (VPCBAE)	DOD, 13 m
Suzuki *et al.*	49	Ic	L/15	Pure	TAH, BSO OMT, LYM	paclitaxel carboplatin	ANED, 36 m
Chang *et al.*	22	Ia	L/20	Mature cystic Teratoma	USO	cisplatin, adriamycin cyclophosphamide	ANED, 84 m
Grandjean *et al.*	32	Ia	L/20	Mucinous Adenoca	USO	cisplatin etoposide	ANED, 9 m
Reckova M *et al.*	67	IV	R/6	Pure	TAH, BSO, OMT, APP	carboplatin etoposide	DOD, 24 m
Current case	55	IIIc	L/8	Pure	TAH, BSO, OMT, LYM	carboplatin etoposide	ANED, 21 m

TAH: total abdominal hysterectomy; BSO, USO: bilateral, unilateral salpingo-oophorectomy, OMT: omentectomy; PP: appendectomy; LYM: lymphadenectomy; DOD: died of disease; ANED: alive with no evidence of disease; AWD: alive with evidence of disease, LTF: lost to follow-up; UKN: unknown.

Discussion

Since Eichhorn *et al.* [4] first reported a small series of 11 patients with primary ovarian small cell carcinoma of pulmonary type, only nine additional sporadic cases have been reported in the literature [5-13]. It usually occurs in peri-post menopausal women with a peak incidence 50-60 years, as in our patient. Its pathogenesis is unclear. In the majority of cases, there was an association with other malignant or benign surface epithelial-stromal tumours, which indicates that these tumours may arise from pre-existing ovarian tumours. In our case no surface epithelial tumoural components were identified which might be attributed to the aggressive behaviour of this tumour replacing any other adjacent ovarian tissue.

Accurate preoperative diagnosis of OSCC is difficult. Its diagnosis is usually unexpected even during surgery, as frozen sections are inconclusive. The combination of histopathological features and immunohistochemistry expression of tumour markers on histological material provide the definite diagnosis of primary OSCC. The majority of cases have been diagnosed at advanced stage

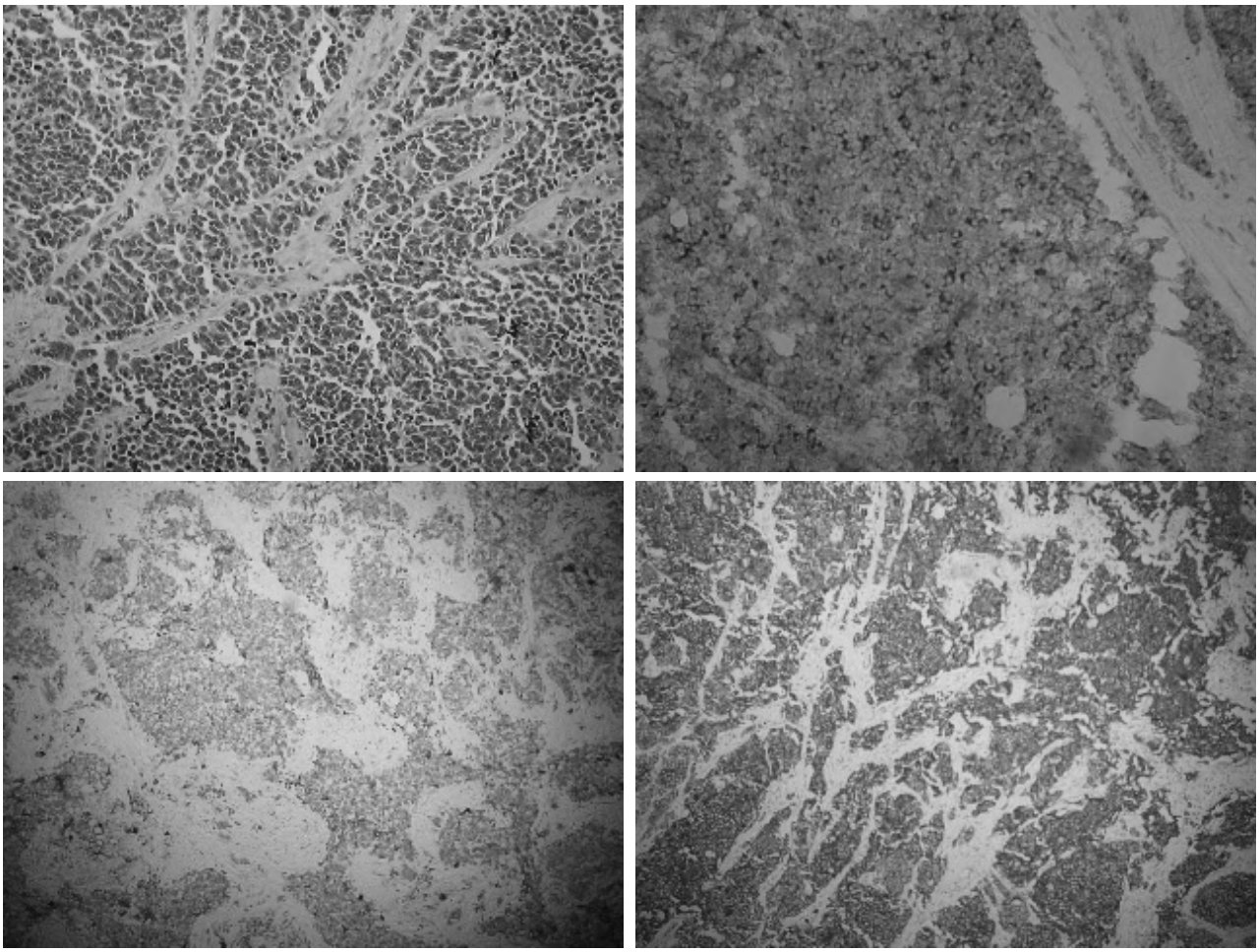

Figure 1. — (A) The tumor consisting of pure small cells with scanty cytoplasm and numerous mitotic figures. (B) Immunohistochemical staining for neuron specific enolase which was diffusely expressed or expressed as diffuse. (C) Immunohistochemical staining for chromogranin is weakly expressed. (D) Immunohistochemical staining for synaptophysin is strongly expressed.

and the tumour size ranges from 4.5 cm to 28 cm. The pattern of tumour spread in advanced stages is comparable to epithelial ovarian tumours. However, our case of advanced OSCC showed a unique pattern of disease dissemination with exclusive spread to the infrarenal paraaortic nodes without peritoneal metastatic implants or omental involvement.

The differential diagnosis mainly includes ovarian tumours composed of small cell with round pattern and scanty cytoplasm. Radiological exclusion of other known primary sites of this type of tumour is mandatory. In our case, chest X-ray and MRI were negative excluding ovarian metastasis from primary lung cancer.

Due to the absence of standard treatment, various chemotherapy regimens have been suggested. However, radical surgery seems to be the cornerstone of treatment for these tumours. Fertility sparing surgery in early stages or suboptimal debulking in advanced stages were associated with early recurrences and poor survival (Table 1).

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