J Interdiscipl Histopathol 2014; 2(2): 104-107 *ISSN: 2146-8362*

Case Report

Extraovarian Primary Peritoneal Carcinoma: A Clinicopathological Gray Zone

Kajal Basavaraj Punyashetty, Anand Anantharao Shankar, Trupti Vyasrao Katti

Department of Pathology, Navodaya Medical College, Raichur, India

Received: December 13, 2013

Accepted: February 14, 2014

Published Online: February 17, 2014

DOI: 10.5455/jihp.20140214013415

Corresponding Author:
Anand Anantharao Shankar
Department of Pathology, Navodaya Medical College, Raichur, India
asanand27@gmail.com

Keywords: Extraovarian carcinoma; primary peritoneal carcinoma; mass in pouch of Douglas (POD).

Abstract
Extraovarian primary peritoneal carcinoma (EOPPC) is a rare disease entity, arising from extraovarian peritoneum with abdominal carcinomatosis, uninvolved or minimally involved ovaries and no identifiable primary. Since an overlap of clinical manifestations and histologic appearances of EOPPC and papillary serous ovarian carcinoma exists, various diagnostic modalities like cytology, tumor markers, gross and histomorphological features, collectively help in arriving at a definitive diagnosis. As very few cases have been reported in literature, we hereby document one such interesting case.

INTRODUCTION

Extraovarian primary peritoneal carcinoma (EOPPC), an epithelial malignancy was first described by Swerdlow (1959) who documented its pelvic location and named it as "mesothelioma of the pelvic peritoneum" [1]. EOPPC manifests mostly in women, as pelvic tumor arising from abdominopelvic peritoneum and characterized by abdominal carcinomatosis, uninvolved or minimally involved ovaries and no identifiable primary and may be mistaken for ovarian or in rare cases, for an intestinal tumor [2].

EOPPC manifests in menopausal women with a median age range of 57 to 66 years, and occurs in 7-15% of all those cases, in which the presumptive diagnosis was ovarian cancer [1, 2]. This case is presented for its rarity, as around 500 cases have been reported in the literature [3].

CLINICAL HISTORY

A 45 years old multiparous woman presented with dull aching and non-radiating abdominal pain of 6 months duration in suprapubic region. It was associated with dysuria and hematuria. The age of menarche and menopause was 11 and 44 years, respectively. On per vaginal examination, an irregular mass was found in right posterolateral fornix measuring 5×5 cms. It was firm in consistency, non-tender and free from cervix. There was no involvement of the rectum by the mass. Clinically, a diagnosis of malignant ovarian tumor was offered. Laboratory findings revealed significantly increased levels of CA125 (270 U/ml). A thick walled mass measuring 5.8×4.7 cms was noted in pouch of Douglas (POD) with cystic degeneration, on abdominopelvic ultrasonography. These findings were confirmed on contrast enhanced computed tomography (CECT) scan, along with heterogeneous nodular omental thickening, omental caking and moderate ascites. Cytological examination of ascitic fluid was positive and PAP cervical smear was negative for malignancy. Ultrasonography (USG) guided fine needle aspiration cytology (FNAC) of mass revealed papillary carcinoma with numerous psammoma bodies. Intraoperatively, the POD mass was free from uterus, cervix, ovaries, intestines and rectum. Uterus and cervix with bilateral ovaries, excised POD mass and partially resected omentum were sent for histopathological examination.

On gross examination, uterus and cervix were unremarkable. Right and left ovaries were histologically normal measuring 3.5x2.5x1.5 cms and 4x3x2 cms, respectively. On cut section, both ovaries showed follicular cysts with focal hemorrhagic areas (Figure 1). POD mass was irregular and friable exhibiting papillary excrescences, measuring 5x3x2.5 cms with focal cystic and hemorrhagic areas. There was focal thickening of omental tissue with mild congestion. No lymph nodes were identified.

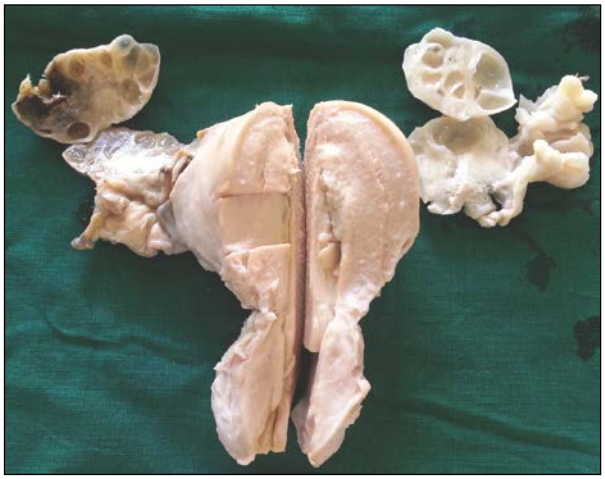

Figure 1: Gross appearance of hysterectomy specimens with bilateral.

Microscopic examination of uterus, cervix and fallopian tubes were unremarkable. Both the ovaries showed tumor deposits measuring <5x5 mm, just below the surface epithelium (Figure 2 and 3). The POD mass consists of predominantly papillary structures, and less frequently clusters and small nests, with good number of psammoma bodies, focal necrotic and hemorrhagic areas. The cells lining the papillae were large polyhedral in shape, exhibiting nuclear crowding, vesicular nuclei, prominent nucleoli, moderate to scant eosinophilic cytoplasm and indistinct cell borders. The number of mitosis was 8-10/10 hpf (Figure 4 and 5). The omentum showed focal tumor deposits. A final diagnosis of extraovarian primary peritoneal carcinoma with metastases to both ovaries and omentum, was considered on histopathological examination.

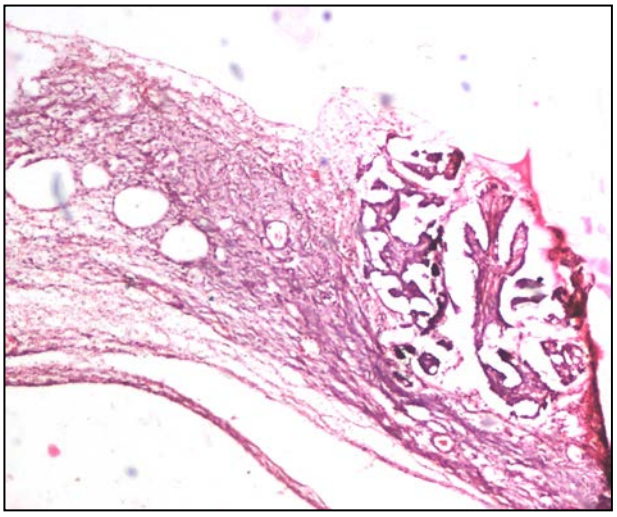

Figure 2: The metastatic deposit just beneath the surface epithelium of the right ovary (H&E, x20).

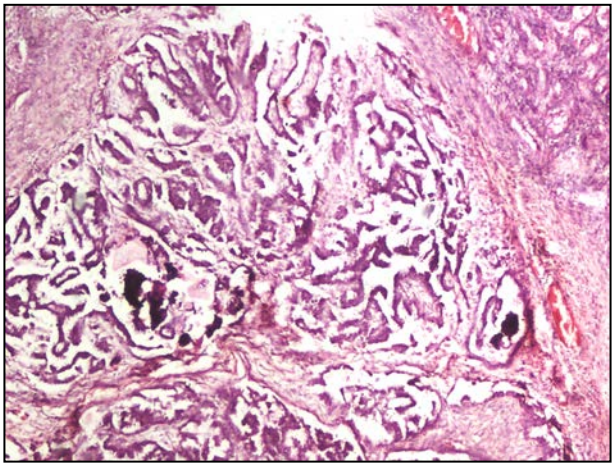

Figure 3: The metastatic deposit in the cortex of the left ovary (H&E, x40).

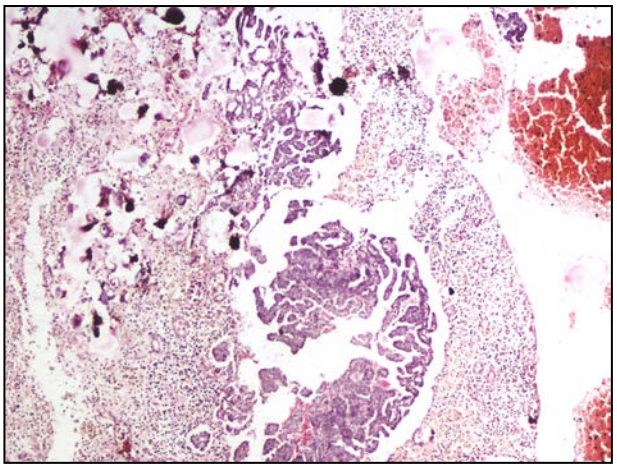

Figure 4: POD mass showing serous papillary carcinoma with psammoma bodies (H&E, x20).

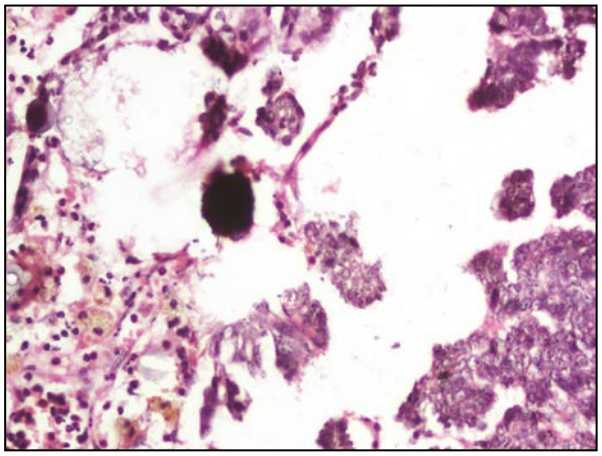

Figure 5: POD mass showing serous papillary carcinoma with psammoma bodies in high magnification (H&E, x40).

DISCUSSION

The pathogenesis of EOPPC has been controversial. Some authors believe that embryonic germ cell rests remain along the gonadal embryonic pathway and EOPPC develops from malignant transformation of these cells, while others contend that field carcinogenesis occurs, with the coelomic epithelium lining abdominal cavity (peritoneum) and ovaries (germinal epithelium) manifesting as common response to an oncogenic stimulus [4,5].

After extensive clonality studies, Muto et al. suggested multifocal origin, whereas Kupryjanczyk et al. identified unifocal origin [6, 7]. Patients commonly present with abdominal distension and ascites and is reported in approximately 85% of cases [1, 2]. Halperin et al found that women with EOPPC had an early menarche and a higher parity, than women with ovarian carcinomas [8].

Killackey et al found that EOPPC was characterized by ascites (85%), malignant washings (91%) and omental involvement (96%) [9]. Dawanda R documented elevated CA-125 level (>35 ug/ml) in > 90% of EOPPC patients [10]. In 1993, to sort out these confounding variables, the Gynecologic Oncology Group (GOG) developed criteria to define EOPPC [11]:

1. Both ovaries must be either physiologically normal in size or enlarged by a benign process.
2. The involvement in extraovarian sites must be greater than the involvement on the surface of either ovary.
3. Microscopically, the ovarian component must be one of the following:
    i. Non-existent;
    ii. confined to ovarian surface epithelium with no evidence of cortical invasion;
    iii. involving ovarian surface epithelium and underlying cortical stroma but with tumour size <5x5mm within ovarian substance with or without surface disease.
4. The histological and cytological characteristics of the tumour must be predominantly of the serous type that is similar or identical to ovarian serous adenocarcinoma of any grade.

Different synonyms conferred are “serous surface papillary carcinoma”, “primary peritoneal carcinoma”, “multiple focal extraovarian serous carcinoma”, “primary peritoneal papillary serous adenocarcinoma”, “serous surface carcinoma of peritoneum”, “extraovarian peritoneal serous papillary carcinoma”, “extraovarian mullerian adenocarcinoma”, “normal sized ovary carcinoma syndrome”, “papillary serous carcinoma of the peritoneum”, etc [2].

EOPPC diagnosis is typically made by exclusion after operative assessment and pathological study and must be differentiated from malignant mesothelioma, metastatic peritoneal carcinomatosis and peritoneal psammocarcinoma [3].

Kannerstein and Churg highlighted differentiation of EOPPC from peritoneal malignant mesothelioma, which has close relation to long term asbestos exposure, affecting predominantly males and also having frequent spindle cell component and psammoma bodies [12]. Ordonez indicated that estrogen receptor (ER) is a differentiating marker, which frequently is expressed in serous carcinomas and not in mesotheliomas [13].

By exclusively recognizing primary tumor in ovary, fallopian tubes or endometrium and less frequently in organs like breast, gastrointestinal tract, lungs and thyroid gland, metastatic peritoneal carcinomatosis can be differentiated from EOPPC [3].

Peritoneal serous psammocarcinoma has larger number of psammoma bodies, less aggressive cytology, absent or moderate nuclear atypia and rare mitosis, compared to EOPPC [3].

According to various authors, immunohistochemistry has certain limitations in diagnosing these lesions, as both primary peritoneal cystadenocarcinoma and primary ovarian carcinoma stain positive for Estrogen Receptor (ER), Cytokeratin 7 (CK7), Wilms tumor suppressor gene-1 (WT-1), and Cancer antigen 125 (CA125) and neither entity possesses Cytokeratin 20 (CK20), Progesterone Receptor (PR), calretinin, Carcinoembryonic antigen (CEA), gross cystic disease

fluid protein-15 (GCDFP-15; BRST2) and thyroid transcription factor-1 (TTF-1) and are immunohistochemically indistinguishable [5]. The prognosis of both serous and non-serous categories of EOPPC is poor with median survival between 7 and 27.8 months, while 5-year survival rates range from 0% to 26.5% [14, 15].

To summarize, the diagnosis of EOPPC is typically made by exclusion and a strong suspicion should be considered in elderly women with history of early menarche, multiparity, abdominal pain and ascites. Definitive preoperative diagnosis in many occasions may be inconclusive. Investigative modalities like imaging, cytology, tumor markers, gross and histomorphological features, collectively, may give a confirmative diagnosis. The histologic appearance, clinical manifestations, and response to treatment for EOPPC closely parallel those of papillary serous ovarian carcinoma. However, involvement of the ovaries is either minimal or nonexistent in EOPPC. From diagnostic and prognostic point of view, this tumor is very important as 18% of laparotomies performed for ovarian carcinoma yield a diagnosis of EOPPC and the rate of recurrence is 70% to 80%, typically within 2 years.

Keeping in mind the presentation and behavior of this tumor, a thorough evaluation can surely help in arriving at early diagnosis, increasing the frequency of detection of EOPPC and thereby modify its prognosis.

CONFLICTS OF INTEREST

Authors declare that they have no any conflict and disclosure.

REFERENCES

1. Jesús Vera Álvarez, Miguel Marigil Gómez, María Dolores García Prats et al. Extraovarian primary peritoneal carcinoma. A case report. Rev Esp Patol 2007; 40 (1): 47-52.
2. Goswami SS, Oza RM, Desai RI, Jasani J. Extra Ovarian Primary Peritoneal Carcinoma. Pathology and Laboratory Medicine 2010; 2(1): 88.
3. Bhuyan P, Mahapatra S, Mahapatra S, Sethy S, Parida P, Satpathy S. Extraovarian primary peritoneal papillary serous carcinoma. Arch Gynecol Obstet 2010; 281(3): 561-564.
4. Bollinger DJ, Wick MR, Dehner LP, Mills SE, Swanson PE, Clarke RE. Peritoneal malignant mesothelioma versus serous papillary adenocarcinoma. A histochemical and immunohistochemical comparison. Am J Surg Pathol 1989; 13(8): 659-670.
5. Zinser KR, Wheeler JE. Endosalpingiosis in the omentum. A study of autopsy and surgical material. Am J Surg Pathol 1982; 6(2): 109-117.
6. Muto MG, Welh WR, Mok SC, Bandera CA, Fishbaugh PM, Tsao SW, Lau CC, Goodman HM, Knapp RC, Berkowitz RS. Evidence for a multifocal origin of papillary serous carcinoma of the peritoneum. Cancer Res 1995; 55(3): 490-492.
7. Kupryjanczyk J, Thor AD, Beauchamp R, Poremba C, Scully RE, Yandell DW. Ovarian, peritoneal, and endometrial serous carcinoma: clonal origin of multifocal disease. Mod Pathol. 1996; 9(3): 166-173.
8. Halperin R, Zehavi S, Langer R, Hadas E, Bukovsky I, Schneider D. Primary peritoneal serous papillary carcinoma: a new epidemiologic trend? A matched-case comparison with ovarian serous papillary cancer. Int J Gynecol Cancer. 2001; 11(5): 403-408.
9. Killackey MA, Davis AR. Papillary serous carcinoma of the peritoneal surface: matched-case comparison with papillary serous ovarian carcinoma. Gynecol Oncol 1993; 51(2): 171-174.
10. Pesicka DR. How to differentiate peritoneal cancer from other diseases. JAAPA 2007; 20(12): 42-45.
11. Fellay CN, Fiche M, Delaloye JF, Bauer J. Extraovarian primary peritoneal carcinoma. Management of Rare Adult Tumors 2010; 279-292.
12. Kannerstein M, Churg J, McCaughey WT, Hill DP. Papillary tumors of the peritoneum in women: mesothelioma or papillary carcinoma. Am J Obstet Gynecol 1977; 127(3): 306-314.
13. Ordoñez NG. Role of immunohistochemistry in distinguishing epithelial peritoneal mesotheliomas from peritoneal and ovarian serous carcinomas. Am J Surg Pathol 1998; 22(10):1203-1214.
14. Altaras MM, Aviram R, Cohen I, Cordoba M, Weiss E, Beyth Y. Primary peritoneal papillary serous adenocarcinoma: clinical and management aspect. Gynecol Oncol 1991; 40(3): 230-236.
15. Kalyani R, Narasimha A, Kumar HML, Narayanswamy S. Extraovarian Papillary Serous Carcinoma of Peritoneum: A Report of Two Cases with Review of Literature. J South Asian Feder Obst Gynae 2013; 5(1):42-44.