

Stromal Osseous Metaplasia in Ovarian Serous Cystadenocarcinoma

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Abstract

Ovarian ossification is a rare pathological condition that may be encountered in neoplastic as well as in non-neoplastic contexts. Its etiology and pathogenesis are controversial. We report the case of a 33-year old female (P6 + 1) who presented with a 4 month history of abdominal distention and amenorrhea. Radiological investigations showed complex pelvi abdominal mass with foci of calcification. The patient underwent total hysterectomy with bilateral salpingo-oophorectomy. Gross pathology findings showed bilateral enlargement of the ovaries and gritty sensation of ovary in slicing. Microscopic pathology showed mature lamellate bone in the wall of right ovary invaded by serous neoplastic cells.

Keywords

Serous cystadenocarcinoma; Cystcarcinoma; Ovary, Ovarian; Osseous metaplasia; Tumor; Psammoma bodies; Calcification

Introduction

Ovarian serous cyst carcinoma is a common ovarian surface tumor^[1,2] "ISSN" : "1542-4863", "PMID" : "21296855", "abstract" : "The global burden of cancer continues to increase largely because of the aging and growth of the world population alongside an increasing adoption of cancer-causing behaviors, particularly smoking, in economically developing countries. Based on the GLOBOCAN 2008 estimates, about 12.7 million cancer cases and 7.6 million cancer deaths are estimated to have occurred in 2008; of these, 56% of the cases and 64% of the deaths occurred in the economically developing world. Breast cancer is the most frequently diagnosed cancer and the leading cause of cancer death among females, accounting for 23% of the total cancer cases and 14% of the cancer deaths. Lung cancer is the leading cancer site in males,

comprising 17% of the total new cancer cases and 23% of the total cancer deaths. Breast cancer is now also the leading cause of cancer death among females in economically developing countries, a shift from the previous decade during which the most common cause of cancer death was cervical cancer. Further, the mortality burden for lung cancer among females in developing countries is as high as the burden for cervical cancer, with each accounting for 11% of the total female cancer deaths. Although overall cancer incidence rates in the developing world are half those seen in the developed world in both sexes, the overall cancer mortality rates are generally similar. Cancer survival tends to be poorer in developing countries, most likely because of a combination of a late stage at diagnosis and limited access to timely and standard treatment. A substantial proportion of the worldwide burden of cancer could be prevented through the

application of existing cancer control knowledge and by implementing programs for tobacco control, vaccination (for liver and cervical cancers). However, the presence of mature bone in stroma of (ovarian) serous carcinoma is an uncommon finding. Only three cases of (ovarian) serous cystcarcinoma with osseous metaplasia have been reported in the literature so far^[3,4]. We are reporting a fourth case of (ovarian) serous cystocarcinoma with mature bone.

Case Report

This is the case of a 33-year old woman (P6 + 1) with last delivery 3 years ago, who was admitted with a chief complaint of recurrent abdominal pain and severe abdominal distention during the past 4 months. She also complained of amenorrhea for the past 3 months; however, no gastrointestinal symptoms were noted. Medical history taking showed no history of per vaginal bleeding, hematochezia or hematuria.

On examination, the patient presented in an altered general state, painful but alert, conscious, and oriented. Abdominal examination revealed a large

ascites and in rectal palpation a huge posteriorly fixed mass was palpated. Per vaginal examination showed an anteriorly dilated cervix. No palpable lymph nodes were found in the groin region.

Laboratory Investigations revealed a Ca-125 = 1806 IU/mL (Reference range: 0 – 35 IU/mL); BHCG = 4.46 IU/mL; CEA = 0.22 ng/mL (Reference range: 0 – 3.4) and CA-19.9 = 12.11 IU/mL (Reference range: 0 – 39 IU/mL).

Abdominopelvic computerized tomography (CT) scan (Fig. 1) was performed and showed a large pelvi abdominal mass measuring 15 x 14 x 10 cm, encasing the sigmoid colon. The mass was complex, showing solid and cystic components as well as calcifications and was visible to the naked eye. Multiple mesenteric deposits were also visible; the largest measured 6.8 x 4 cm. Large ascites and bilateral moderate hydronephrosis with hydroureter were also mentioned.

The patient underwent total hysterectomy with bilateral salpingo-oophorectomy. Gross pathology examination of the specimen showed a bilateral enlargement of the ovaries: the right one measuring



Figure 1. CT scan for abdomen and pelvis shows complex pelvi abdominal mass containing solid and cystic components as well as calcifications.

10x10x3cm and the left one measuring 4.2 x 3.2 x 3cm. The right ovary was ruptured and adherent to the rectum and uterus. Cut sections of both ovaries showed soft, friable, gray-tan and hemorrhagic tissue with areas of gritty sensation in the right ovary.

Microscopic examination (Figs. 2 and 3) revealed a neoplastic growth of both ovaries arranged in solid sheets and papillae, surrounded by desmoplastic stroma. This growth was composed of atypical serous cells with pleomorphic nuclei, some of which were

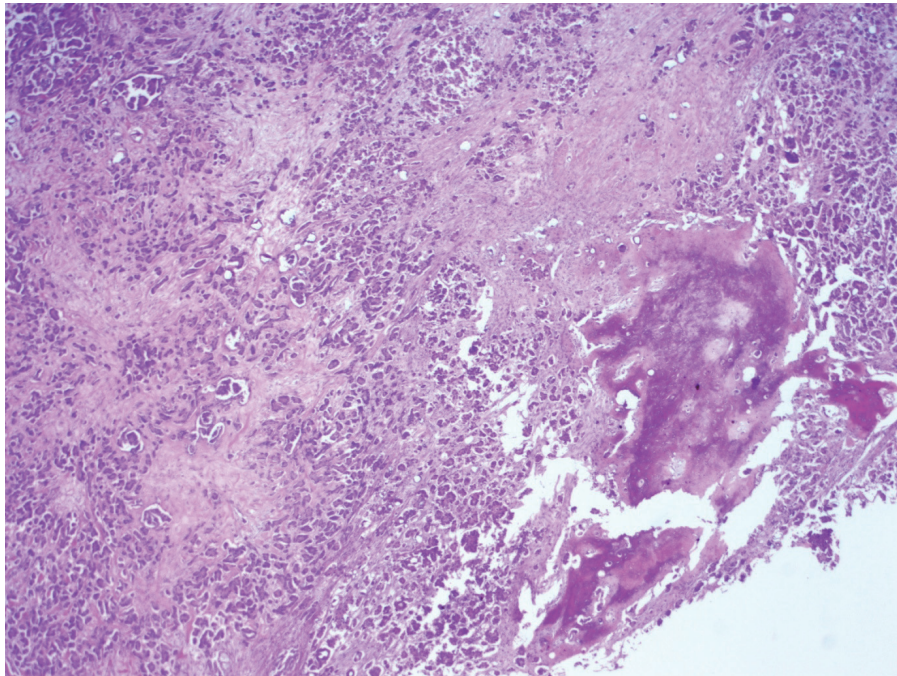


Figure 2. Low-power view of right ovary (4x). Showing serous epithelium neoplasm and osseous metaplasia.

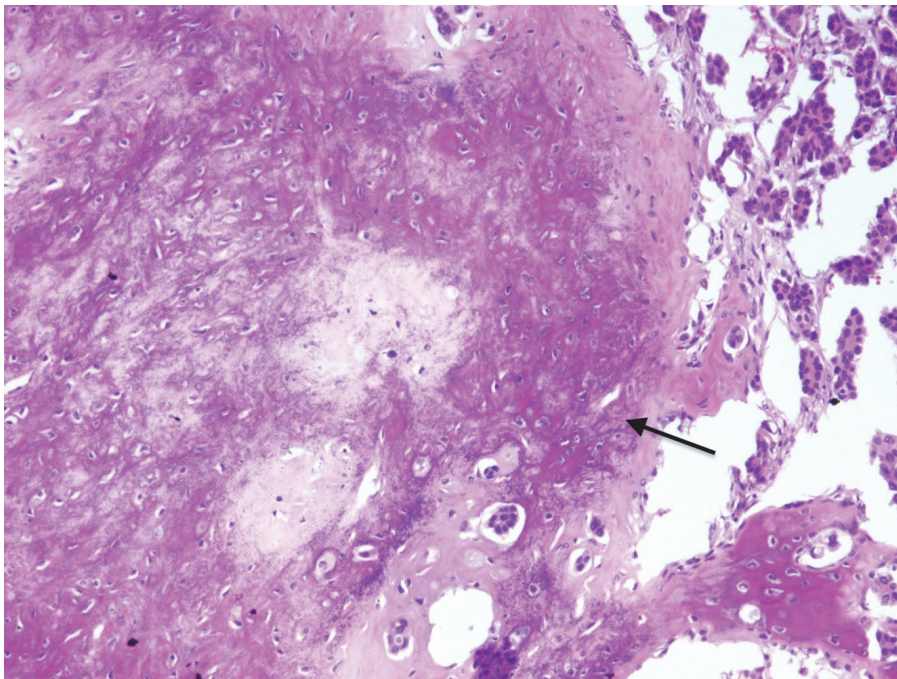


Figure 3. High-power view of right ovary (20x). The lamellar bone (arrows) is invaded by epithelial cluster of serous adenocarcinoma.

multinucleated and hyperchromatic and some were vesicular with prominent nucleoli. Occasional mitosis was seen. Numerous psammoma bodies (concentric lamellated calcified structures) were found, as well as a focus of mature lamellate bone in surrounding stroma in the right ovary.

The pathology report concluded a serous cystocarcinoma of the ovary with mature osseous metaplasia.

Discussion

The presence of mature lamellate bone in an ovary is usually seen in association with ovarian teratoma^[5].

Isolated bony trabecula in non teratomatous ovarian neoplasm is a very rare phenomena^[6].

The non teratomatous ovarian tumors reported with mature bony trabecula include the following: Two cases of Mucinous cystadenoma^[7,8], one benign serous cystadenoma^[9], three cases of sex cord stromal tumor^[10-12], one case of endometrioid adenocarcinoma^[13] and three cases of serous cystadenocarcinoma^[3,4]. So up to my knowledge our case is the fourth serous cystadenocarcinoma with mature bony trabecula in the wall.

On the other hand ovarian ossification also reported in non-neoplastic ovarian condition like endometriosis^[5,6,14-16] and simple follicular cyst with urogenital abnormality^[17].

Many hypotheses have been proposed in literature to explain the origin and pathogenesis of ovarian stroma ossification, one of which suggests in benign (non-neoplastic) lesions the concurrence of infarction and chronic inflammation consequent to torsion^[5,16,18] and leading to hyalinization dystrophic calcification. In neoplastic lesions, ossifications are attributed to a form of bony metaplasia of ovarian stroma induced by bone growth factors that are secreted by neoplastic cells^[11,13].

The pathogenesis of psammoma bodies that is a characteristic feature of serous neoplasm, on the other hand, is still not clear and some authors suggest spontaneous induction or formation secondary to tissue necrosis^[6].

The prognostic value of ossification in ovarian neoplasms, especially in serous tumors, is still unknown^[13].

Ossification has also been reported in other female reproductive system organs including cervix,

endometrium, and vagina^[19-21]; however, a previous history of pelvic trauma or irritation consequent to surgery or radiotherapy is reported in the majority of these cases.

Conclusion

Ovarian ossification can be identified in a variety of benign and malignant ovarian neoplasm. The case we report is the fourth case of serous cystadenocarcinoma with ossification and bony metaplasia.

Conflict of Interest

The authors have no conflict of interest.

Disclosure

None of the authors received any type of commercial support either in forms of compensation or financial for this study. They have no financial interest in any of the products or devices, or drugs mentioned in this article.

Ethical Approval

Obtained.

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حالة تحوّل عظمي في سرطان المبيض المصلي

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المستخلص. يعتبر التحوّل العظمي للمبيض حالة مرضية نادرة قد تواجه في الأورام الخبيثة وغير الخبيثة على حدّ سواء، ولا يزال تفسير أسبابها المرضية مثيرا للجدل. نقدم حالة امرأة ذات ٣٣ عاما حضرت للفحص مُشْتَكِيَة من انتفاخ في البطن وانحباس في الطمث منذ أربعة أشهر. أظهرت الفحوصات الإشعاعية كتلة حوضية-بطنية معقدة مع مناطق تكلس. أُجريت للمريضة عملية استئصال تامة للرحم مع استئصال ثنائي لكل من البوق والمبيض. بيّنت دراسة العيّنة بالعين المجردة تضخّما في المبيضين مع حس رملي عند تشريحهما. أمّا الدراسة المجهرية فأظهرت صفائح عظمية ناضجة التكوين في جدار المبيض الأيمن تجتاحها خلايا ورمية مصلية.