Case Report

Ovarian Collision Tumor: Serous Cystadenoma and Teratoma in Same Ovary

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Abstract

The coexistence of two adjacent but histologically distinct tumors without histologic admixture in the same tissue or organ is a collision tumor. The serous cystadenoma of ovary is a surface epithelial tumor of the ovary that is derived from coelomic epithelium. Teratoma on the other hand derived from pluripotent germ cells containing more than one germ layer component. Two different tumors arising independently are very rare and interesting. We wish to report such a case.

Keywords: *Ovary, collision tumor, serous cystadenoma, teratoma.*

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Introduction

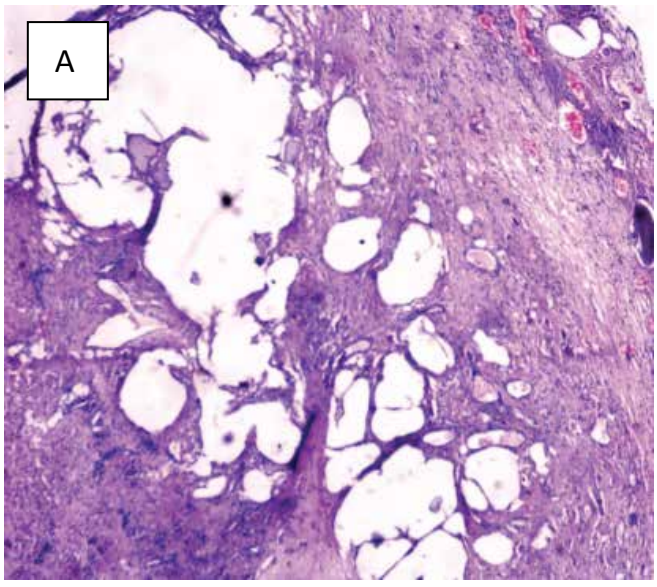
Collision tumor is defined as a tumor in which the neoplastic components remain histologically distinct and separated from each other by a narrow stroma or their respective basal lamina[1]. Collision tumors can occur within the same organ or adjacent organs or in conjunction with a systemic malignancy or as a metastatic phenomenon[1]. Although uncommon, they have been described in almost all major organs with a variety of component pathologic features. The majority are diagnosed postoperatively after histologic examination. The origin of these tumors has been debated. It is proposed that collision tumors could arise from 2 different cell lines growing at the same time side by side or a chance occurrence of 2 tumors in the same organ. The other common view is the origin from a common precursor pluripotent stem cell. Ovarian collision tumors are rare[2]. We present this case because collision tumors in ovary are a rare entity and combination of serous cystadenoma with teratoma is rarer. Though collision tumors have been reported earlier, combined serous cystadenoma with mature cystic teratoma is rarely reported.

Case report

A 45 years old married multiparous female presented in gynecological outdoor with complain of abdominal

distension and mild abdominal pain. Her menstrual history was normal and obstetric history was uneventful. She had no history of weight loss, fever and vaginal discharge. The past medical history was unremarkable. Routine hematological parameters were within normal limit. Per abdominal examination show fullness and mild tenderness in the right lower abdomen. Abdominal sonography revealed solid cystic right adnexal mass with mild ascites. An abdominal hysterectomy with right sided salphingo-ophorectomy with omental biopsy was done. Grossly, the cut surfaces of the uterus and cervix were unremarkable. The ovary was (19x14) cm. in size, cut surfaces showed solid soft to firm areas with multiple cystic areas (Figure 1C). The largest cystic area was (12x9) cm. containing clear serous fluid. Solid area was grey white in color, soft to firm in consistency filled with cheesy material and a few hair follicles. The fallopian tube was unremarkable. The omental fatty tissue was (3.5x1.5) cm. with no nodule or calcification identifies grossly.

Microscopic examination of the body of the uterus and cervix show unremarkable endomyometrium with features of chronic cervicitis. The ovary showed multiple cystic areas lined by cuboidal to low columnar epithelium with adjacent area revealing a cyst lined by keratinized stratified squamous epithelium with underlying adipose tissue, a few hair follicle and focal aggregates of cartilage (Figure 1A, 1B). Omental biopsy showed no tumor deposit.



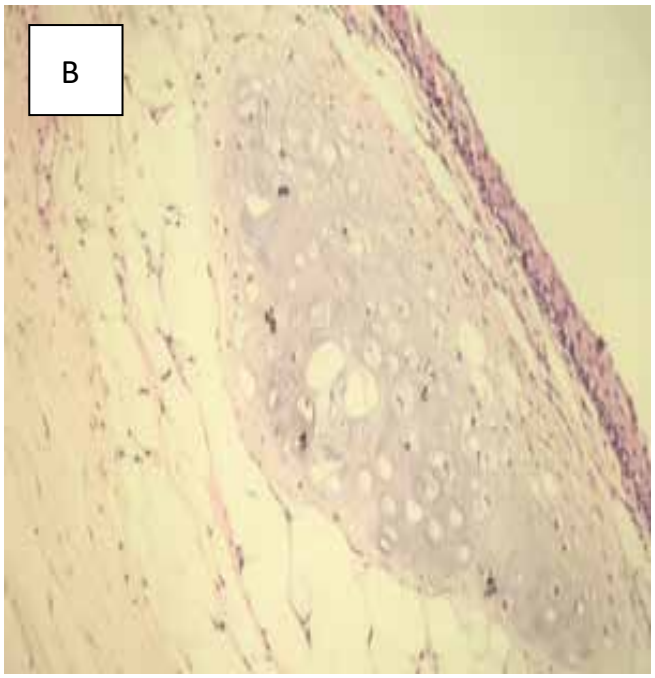


Figure 1: A. Cyst wall of serous cystadenoma (40x, H&E), B. Mature cystic teratoma cyst wall lined by stratified squamous epithelium with cartilaginous tissue (40x, H&E). C. Gross picture of Ovary with collision tumor showing two separate component.

Discussion

Collision tumors have been reported in various organs other than ovary including esophagus, stomach, thyroid gland etc[3]. They are extremely rare in the female genital tract and are documented as individual case reports. Although teratomas collision with mucinous cystadenoma in the ovary has been quite well known,

the pathogenesis of teratomatous and adenomatous collision tumor in the ovary remains controversial and poorly understood[4]. The first hypotheses for the formation of collision tumor is the coexistence of two primary tumors in the same tissue is due to "chance accidental meeting". The second hypothesis is the presence of first tumor alters the microenvironment of give rise to the development of the second primary tumor or seeding of metastatic tumor cells. The third theory suggests that each primary tumor originate from a common stem cell[1].

Collision tumors affect both pre and postmenopausal women. However, the patients with benign lesions are younger than patients bearing a malignant disease. Their clinical manifestations include abdominal swelling, palpable mass, abdominal pain, pelvic pain and abnormal uterine bleeding while some cases are diagnosed incidentally[5]. In a study the authors reviewed seven pathologically proven cases of collision tumor of ovary associated with teratoma. Ovarian teratoma were coexisted with four cases of mucinous cystadenoma, one each borderline mucinous tumor, mucinous cysdenocarcinoma and dysgerminoma[6].

Collision tumors are more often unilateral, and can vary in size from 2 to 200 cm and mostly occur in the age group of 17-66 years[7]. Most collision tumors are diagnosed postoperatively after histopathological examination. Patterson et al retrospectively analyzed radiologic findings in histologically confirmed collision tumors associated with teratoma to look for features that might help in their preoperative diagnosis. They found that most of the collision tumors had radiologic clues such as the presence of nonfatty fluid in the cyst and a large solid component in the ovarian mass, which pointed toward the presence of two different tumors[8]. Such clues, in addition to frozen section analysis, could help in deciding on further management, particularly the type and extent of surgery. Other mixed tumor also well known, i.e., composite tumor which is defined as the intermingling of more than two different components in one tumor mass is designated as composite tumor and most famous example is a malignant mixed mullerian tumor[9].

Although there is no satisfactory explanation for the occurrence of such collision tumors, questions that are not easy to answer and require further explanation including: a) are these tumors simple incidental association?, b) Are there any causal relationship?, c) Is there any co-incidental genetic damage?. Molecular studies of the tumor can be helpful in defining the clonality and histogenesis of these tumors.

Conclusion

The diverse histologic types in a same organ effect prognosis. The factors need to be considered after surgery is the more aggressive component of the collision tumor and the stage at diagnosis.

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