

Collision Tumor: A Rare Case Report of Benign Teratoma and Mucinous Cystadenoma in the Same Ovary

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ABSTRACT

Collision tumor is defined as the coexistence of two adjacent, but histologically distinct tumors without histological admixture in the same tissue or organ. Collision tumors involving ovaries are extremely rare. The coexistence of a mucinous cystadenoma with a dermoid cyst is infrequently reported. However, the most common histological combination of collision tumor in the ovary is the coexistence of teratoma with mucinous tumors. Recognizing the potential for the coexistence of these two neoplasms in the same ovary is essential to be able to make a correct diagnosis. We report here a rare case report of ovary comprising mucinous cyst adenoma and mature cystic teratoma. The case was diagnosed post-operatively. It is important to correctly diagnose the component of tumour for further management and favourable prognosis.

Keywords-Collision tumor, Benign cystic teratoma, Mucinous cystadenoma.

Introduction

Benign mucinous cystadenomas are surface epithelial tumors of ovary account for 80% of mucinous ovarian tumors and 20-25% of overall benign ovarian tumors[1]. Dermoid cyst is a type of germ cell tumor comprising well differentiated tissues and three germ cell layers: ectoderm, mesoderm, and endoderm, which is also known as mature cystic teratoma[2]. With peak incidence in females aged 20–40–years, these tumors comprise 10–20% of all ovarian neoplasms[2]. These tumors are characterized as generally slow-growing and unilateral, with a reported bilateral incidence of 10%[3]. A collision tumor is the coexistence of two adjacent, but histologically distinct tumors without histological admixture in the same tissue or organ. Such tumors have often been reported in various organs, but location in the ovary is rare. Some other collision tumors of the ovary have been described in literature as

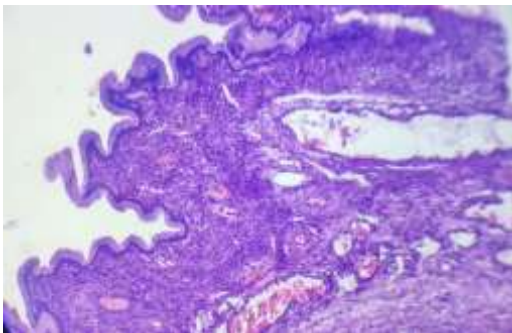
Serous cyst adenocarcinoma and granulosa cell tumor[4], teratoma with granulosa cell tumor[5]. The juxtaposition with dermoid cysts has been reported as comprising approximately 5% of benign mucinous ovarian tumors and rare examples of proliferating mucinous tumors[6].

Case Report

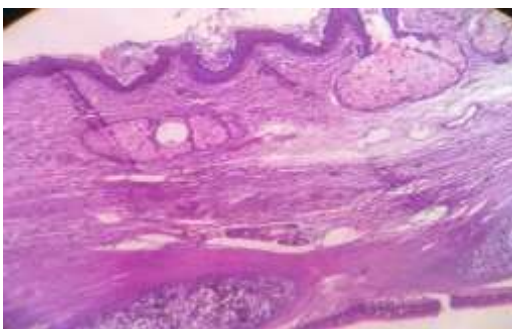
A 21 year old five month pregnant female was incidentally diagnosed a large right side cystic ovarian tumor measuring 16.8×12×11.9cm on abdominal ultrasonography for routine obstetrical checkup. Her serum CA125 and LDH level were 16.9 U/ml and 350.4 U/l respectively. On the basis of USG finding patient underwent right salpingoophorectomy.

On gross examination, tumour measured 15 x 11 x 10 cm in size. The outer surface was cystic and smooth with attached fallopian tube measuring 4 cm with patent lumen. Cut surface showed

unilocular cysts filled with thick and viscid gelatinous fluid along with a area showing pultaceous material, fatty tissue and hair. Representative sections were taken. Sections from cyst wall show a single layer of mucin secreting tall columnar epithelium consistent with mucinous cystadenoma (benign) Fig[1]. Sections from the teratoid part showed stratified squamous epithelium, skin appendages, mature cartilage and urothelium[Fig2].



Fig[1]:H&E 10x showing cyst lined by tall columner epithelium



Fig[2]:H&E 10x showing stratified squamous epithelium, skin appendages, mature cartilage and urothelium.

DISCUSSION

Collision tumour is coexistence of two distinct tumours in the same organ without any histological intermixing[7].

Previous reports have detailed collision tumors in several organs other than the ovary, including the esophagus, stomach, liver, lung, thyroid and kidney[8,9]. The most common histological combination of collision tumor in the ovary is the coexistence of teratoma with mucinous tumors [10,11]. in a study conducted at seoul national

university college of medicine, the authors reviewed seven pathologically proven cases of collision tumor of ovary associated with teratoma. Ovarian teratomas were co-existent with mucinous cystadenoma (4 cases), borderline mucinous tumor (1 case), muucinous cystadenocarcinoma (1case), and dysgerminoma (1case)[10]

Although pathogenesis of collision tumours is not well understood some of the hypotheses put forward to explain are:

The occurrence is coincidental, especially in tumors originating from neighboring tissues [12,13] or chance apposition of two unrelated tumors[14].

Simultaneous proliferation of two different cell lines[14].

Common origin from pluripotent precursor stem cell that differentiates into two components[14].

A carcinogenic agent may interact with different tissues, inducing different tumors[12,13].

Alteration in the microenvironment, such as angiogenesis and inflammation, by the primary tumor could facilitate the growth of metastases from a second primary tumor from another organ[15,16]. Teratoma is a germ cell neoplasm whereas origin of mucinous cystadenoma is explained by metaplasia of the ovarian surface epithelium[11,17]. So in a case where these two tumours coexisted a possibility may be considered that teratoma originated from a germ cell rest [18].

Another possibility could be that the teratoma resulted from pathogenesis of ovum evolved in a graffian follicle which failed to rupture, together with the mucinous adenoma cysts from the 'epithelial metaplasia' of the follicular lining[19]. Collision tumours 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[19]. Most collision tumours 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[20]. Such clues, in addition to frozen section analysis, could help in deciding on further management, particularly the type and extent of surgery. Other mixed tumour also well known, i.e., composite tumour which is defined as the intermingling of more than two different components in one tumour mass is designated as composite tumour and most famous example is a malignant mixed mullerian tumour[21].

Conclusion

In our case there was no radiological or intraoperative clues about the existence of a collision tumour; it is therefore very crucial to do grossing of specimen carefully, so any component that might have a worse effect on prognosis must not be missed. Histopathologist, surgeons, and oncologists to be aware of existence of such rare collision tumours and recognition of such tumours are important as they will dictate appropriate treatment strategies dependent on the individual biological aggressiveness of each of the tumour components.

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