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Case Report

Collision tumor of ovary: an uncommon entity

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ABSTRACT

Collision tumors are a rare group of neoplasms characterized by coexistence of histologically distant type of tumors in the same organ without any evidence of histological intermixing. We present a case of 35 years old female presenting with irregular menstrual cycle and was found to have collision of tumor of ovary composed of serous cystadenoma and mature cystic teratoma on histopathological evaluation. No histological admixture was found between the two lesions. These tumors are exceptionally uncommon entities and may present with diagnostic dilemma due to their complex morphology. This case, thus, highlights the importance of histopathological evaluation in diagnosing this entity. Awareness of this rare entity is also essential as early recognition influences prognosis, therapeutic decisions and patient follow up.

Keywords: Collision tumor, Ovary, Serous cystadenoma, Mature cystic teratoma

INTRODUCTION

Collision tumors are very rare and defined by presence of two histologically different tumors in the same organ.¹ These tumors have been identified in many organs such as liver, kidney, brain, lung, stomach, oesophagus, bone and ovary with ovary being the rarest.² These collision tumors can have varied combinations varying from benign-benign, benign-malignant and/or malignant-malignant. However, one common component reported in many collision tumors of ovaries is mature cystic teratoma.³

Here, we report an incidentally detected case of a collision tumor of ovary composed of mature cystic teratoma and serous cystadenoma in a 35 years old female.

CASE REPORT

A 35 years old female with regular menstrual cycle, presented to the hospital with pain abdomen on and off since last 1 month. General physical examination was unremarkable. Radiological investigation was done and it

revealed a cystic mass measuring 430 mm×190 mm×100 mm in the right ovary. Laparoscopic Right ovarian cystectomy was performed for the patient and the sample was sent to our histopathology department.

Gross examination

Grossly; we received an already cut open cystic tissue measuring 4 cm in diameter. On the inner aspect, whole of the ovarian parenchyma was replaced into a unilocular cyst. Wall thickness measured 0.1-0.2 cm. However, no solid areas/papillary excrescences were identified in the specimen and whole of the specimen was processed.

Microscopic examination

Microscopic examination showed a cystic tissue focally lined by flattened cuboidal to low columnar lining epithelium. (Figure 1a) Wall showed compressed ovarian parenchyma admixed with components representing all the three germ layers including adipose tissue, stratified squamous epithelium and thyroid parenchyma (Figure 1b).

Based on the above-mentioned findings, the final diagnosis of ovarian collision tumor including serous cystadenoma with mature cystic teratoma was rendered.

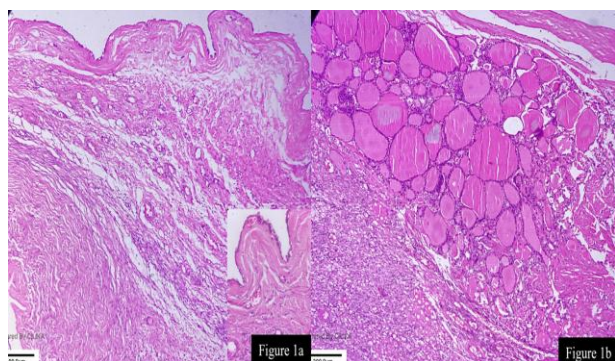


Figure 1: (a) H and E (at 100X)- Photomicrograph shows a cystic tissue lined by flattened cuboidal to low columnar epithelium consistent with serous cystadenoma. (Inset shows similar morphology on higher magnification 400x); and (b) photomicrograph shows components of mature cystic teratoma.

DISCUSSION

Collision tumors are defined as presence of two tumors simultaneously occurring in the same organ but with different histological subtype.⁴ Each component of the collision tumor can occur coincidentally without any relevant connection between the 2 tumors. The collision tumor of mucinous cystadenoma and mature cystic teratoma is the most commonly encountered one⁴ unlike our case where, we had a combination tumor which showed the features of teratoma admixed with features of serous cystadenoma.

The ovarian teratomas are the most common benign germ cell tumors and are defined as tumors comprising of tissue representing at least 2 embryonic layers; ectoderm, endoderm and/or mesoderm. Most commonly affects young individuals.⁵

They are subtyped as mature, immature or malignant. Amongst the benign, mature cystic teratomas, also known as dermoid cysts, comprises almost 25% of all ovarian tumors. Grossly, they are composed of a partly cystic and partly solid component.³

Ovarian cystadenomas are classified based on cell type into serous cystadenomas and mucinous cystadenomas. Serous cystadenomas are benign, unilocular, cystic tumors containing serous fluid or less commonly may contain haemorrhagic or thin mucinous fluid. They may serve as precursors to serous borderline tumors, or low-grade serous carcinomas. These tumors constitute 25% of benign cystic neoplasms. They are usually unilateral.⁶ Although, the exact cause is not well understood, one proposed hypothesis suggests they may be embryological remnants of the urogenital apparatus with epithelial and mesothelial

tissues. Collision tumours are mostly unilateral and size may vary from 2 to 200 cm. It mostly occurs in the age group of 17-66 years.¹ Various combinations have been reported in the literature which may include combinations of teratoma with cystadenocarcinoma, serous cystadenocarcinoma with teratoma, carcinosarcoma with teratoma⁷, sarcoma and mucinous tumor⁸, sarcoma and serous carcinoma⁹, serous cystadenoma and Sertoli-Leydig cell tumor¹⁰, granulosa cell tumor and ovarian hepatoid carcinoma¹¹, granulosa cell tumour and endometrioid carcinoma.¹² Each component of collision tumors can occur coincidentally without any connection between the two entities.

Although pathogenesis of collision tumours is not well understood in the literature, however few hypotheses put forward to explain are as follows- (a) a carcinogenic agent may interact with different tissues, leading to development of different tumors; (b) common origin from pluripotent precursor stem cells that differentiates into two different components and Simultaneous proliferation of two different cell lineages; and (c) 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.¹³⁻¹⁶

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 commonest example is a malignant mixed mullerian tumour (MMMT).¹⁷

Diagnosis of collision tumors are purely based on the post-operative histopathological diagnosis. Sometimes, preoperatively radiology can give clues such as, the presence of solid and cystic component in ovarian tumors, but which cannot rule out other solid and cystic neoplasm of the ovaries. However, in our case, there was no such radiological or intraoperative clues about the existence of a collision tumour; hence proves the importance of histopathological assessment in such cases.

CONCLUSION

The factors which should be considered for further management after surgery are the types of components, most aggressive component and the stage of tumour, which will help determine the prognosis.

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