A Case of Mature Ovarian Teratoma harbouring Intestine

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Introduction

Mature cystic teratoma (MCT) of the ovary, as a synonym for the ovarian dermoid cyst, is a benign germ cell tumor. The words "teratoma" and "dermoid" were first described by Leblanc in 1831[1]. The incidence of MCT is 10–20 % of all ovarian tumors. It shows the highest incidence in reproductive age women (range 20 to 40 years) [2,3]. It is a slow growing tumor, and the estimated increasing rate is 1.8 cm per year [4]. Long term recurrence rate is less than 5 % after fertility sparing surgery making it a good option for reproductive age group [5].

Case

A 17-year-old girl presented with a history of palpable lump in lower abdomen since two years, gradually increasing in size. Initially she consulted a local practitioner and was told to have an ovarian cyst and advised surgery. However, the patient did not take any treatment for two years. Two months ago, she had an episode of acute abdomen. Diagnostic work-up was done at a tertiary center: ascitic tapping was negative for tuberculosis and malignancy; PET scan was suggestive of ovarian malignancy. She underwent laparotomy but the pelvic mass could not be excised due to dense adhesions with bowel and the abdomen was closed and patient referred to our institute.

On examination, she had a 15x15 cm abdomino-pelvic mass, firm to hard in consistency, non-tender, with irregular margins and restricted mobility. Serum tumour markers were as follows: alpha feto-protein-2.6 ng/mL (10-20 ng/mL), beta-hCG-1.2 mIU/ml (<5.0 mIU/ml), lactate dehydrogenase- 182 U/L (140-280 U/L), CA125-16.5 U/mL (<35.0 U/mL), carcinoembryonic antigen-12.2 ng/mL (<2.5 ng/mL), CA19.9- 35 U/mL (<37.0 U/mL). Ultrasonography showed a 10x10 cm hypoechoic lesion arising from the left ovary with internal hyperechoic septae and calcifications. On CECT, a 10x7x10 cm solid-cystic lesion which was FDG-avid on PET scan was seen arising from left ovary with multiple septae and calcifications.

With a clinical diagnosis of immature teratoma, she was taken for a staging laparotomy. There was a 15x15 cm irregular cystic mass arising from the left ovary which was densely adherent to anterior abdominal wall, omentum and small bowel. There was no ascites, nor were there any peritoneal deposits. On cut section, the multilocular cyst was found to contain sebaceous material, hair and well-formed bowel-like structures (Fig. 1). Left salpingo-oophorectomy and omental biopsy were done and she made an uneventful recovery.

Histopathology confirmed a left ovarian mature teratoma with derivatives from all three germinal layers including skin, bone, respiratory epithelium, intestinal epithelium, nerve bundles, skeletal muscle and glial tissue. Immature elements were absent (Fig. 2, A-F).

Discussion

MCT contains components originating from three germ cell layers (ectoderm, mesoderm, and endoderm) with varying ratios of skin, neural, teeth, cartilage, respiratory and intestinal epithelium [3]. They include

elements of ectodermal origin in 99–100%, mesodermal origin in 73–93%, and endodermal origin in 32–72% [6-8]. About 7–13 % of MCT cases include intestinal epithelium [7], however, there are only a few cases of ovarian MCT containing complete intestinal structures [9,10].

Woodfield et al first reported almost complete development of the gastrointestinal tract in a benign cystic teratoma first containing esophagus to colon [11]. Subsequently only four cases of MCT containing well oriented complete intestinal structure have been reported in the literature and these are described in table 1. In most of them the tumor size was less than 10 cm which in our case was also 10 cm. CEA can be an important marker for predicting presence of intestinal epithelium and to be vigilant for malignant intestinal cancers which was also raised in our case [12,13]. Well differentiated mature neuronal component showed FDG activity misleading the diagnosis as also found in our case [14]. In view of low rate of long term recurrence, fertility sparing surgery was done in the current case as well.

Conclusion

Occurrence of formed bowel inside a mature cystic teratoma is very rare. Significance of this finding is that the colonic epithelium may be the origin of adenocarcinoma. In cases where the mature cystic teratoma is densely adherent to bowel and has been dissected out after adhesiolysis; the cut section of specimen showing bowel can be alarming to the surgeons.

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Key Clinical Message

About 7–13 % cases of mature cystic teratoma contain intestinal epithelium but there are only a few reported cases containing complete intestinal structure. We discuss here the case of a 17 year old girl with the above finding and its management.

Keywords: bowel, dermoid cyst, intestinal epithelium, mature teratoma, ovary

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Table 1: Case reports with intact intestinal segment associated with Mature cystic teratoma

Author, (year)	Age (years)	Tumour size (cm)	Tumour markers	Procedure done	Features	Prognosis
Fujiwara et al. (1995)[9]	35	7		Right salpingo-oophorectomy	Complete segment of intestinal wall, containing mucinous cystade-noma of appendiceal type	
Tang et al (2003)[10]	16	18	CA125: 89 U/ml	Left salpingo-oophorectomy	Complete colonic wall in continuity with an endocervical-type mucinous cystadenoma	No recurrence

Author, (year)	Age (years)	Tumour size (cm)	Tumour markers	Procedure done	Features	Prognosis
Nelson et al (2011)[15]	45	10		Right salpingo-oophorectomy	Gross appearance of intestinal tissue and without communication to bowel	
Takao et al. (2018)[12]	66	9.5	CA125: 36.2 U/ml CEA: 34.9 ng/ml	Total abdominal hysterectomy and bilateral salpingo-oophorectomy	Intestinal structures harboring intestinal type mucinous neoplasm, mimicking low-grade appendiceal mucinous cystadenocarcinoma	no recurrence at 1.5 years

Figure Legends

Fig. 1 Multilocular cyst containing sebaceous material, hair and well-formed bowel-like structures

Fig. 2 Sections from the tumor mass shows presence of skin with adnexal structures (A; H&E X100), calcification (B; H&E X100), respiratory epithelium (C; H&E X100), colonic wall (D; H&E X40 and E; H&E X100) and glial tissue (F; H&E X100)

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