Growing Teratoma Syndrome following Immature Teratoma Stage 1A - A Rare Clinical Entity

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Citation

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Abstract

Immature teratoma of the ovary is a rare malignant germ cell tumor (GCT) which occurs predominantly in children and adolescents and represents < 10% of all ovarian tumors. The management of immature teratoma is conservative surgery followed by combination chemotherapy in cases with FIGO stage > I or grade >1. One interesting aspect of follow up after therapy of germ cell tumors especially immature teratoma has been the description of Growing Teratoma Syndrome (GTS). GTS is an extremely rare complication of nondysgerminomatous malignant germ cell tumors characterized by enlarging masses of differentiated teratoma during or after chemotherapy in patients with GCT, associated with normalization of tumor markers. Only 47 cases of GTS following ovarian GCT have been reported so far. Here we discuss a case of GTS in a 22-year-old girl who had underwent conservative surgery for stage IA Ovarian Immature Teratoma followed by chemotherapy 3 years back. Management of case is presented along with review of literature of Growing Teratoma Syndrome.

INTRODUCTION

Growing Teratoma Syndrome(GTS) is an extremely rare metastatic complication of malignant germ cell tumor, described for the first time in Nonseminomatous Germ Cell Tumor(NSGCT) of testis (1), characterized by enlarging masses of differentiated teratoma during or after chemotherapy in patients with GCT. While the incidence of GTS reported in NSGCT of testis treated with chemotherapy is between 1.9% & 7.5% (1,2) , it is very rare in ovarian GCT with only 47 cases having been reported so far, majority following Stage III tumors with peritoneal spread(3). Here we report a case of GTS during follow up of treated case of stage IA Immature Teratoma.

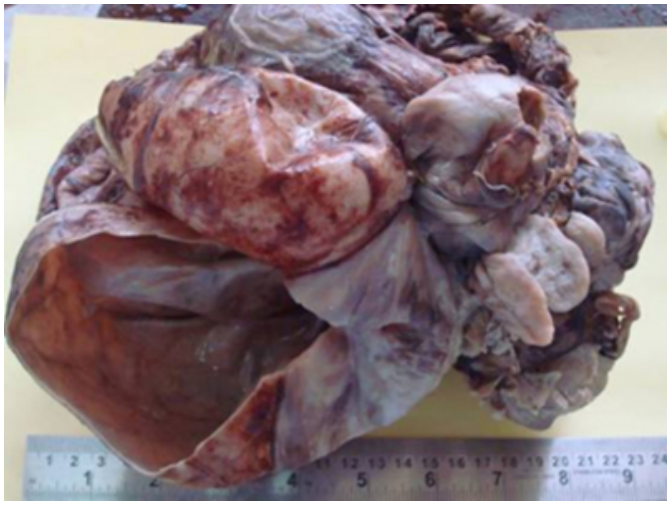
CASE REPORT

A 22-year-old unmarried girl presented to the gynecological outpatient department in March 2008 with dull aching pain whole abdomen with distension for 20 days. There were no bowel or bladder complaints. She was having normal menstrual cycles. Three years back in November 2004 she had underwent staging laparotomy with left salpingo-oophorectomy for left ovarian tumour of size 20cm X 25cm. Tumor was removed intact without any spillage. Serum tumor markers studies showed increased levels of feto protein (5378.4 ng/ml) and CA-125 levels (167.78U/ml). Final diagnosis was Stage IA Immature teratoma (mixed with mature elements) grade III. Post operatively she received 3 courses of chemotherapy (Vincristine, Actinomycin D and Cyclophosphamide). After that she was lost to follow up.

On examination her general condition was unremarkable. Whole abdomen was distended and filled with ill defined solid cystic mass. Ultrasound followed by CT scan revealed solid cystic mass 22cm X 10cm X 21cm with multiple thick septation, interspersed areas of calcification and fat attenuation with marked superior and peripheral displacement and compression of bowel loops. Uterus and right ovary was normal. Serum tumor markers were found to be normal (feto protein :3.33u/ml,CA-125 levels 15U/ml, LDH -346u/l & Serum HCG 4miu/ml). On exploratory laparotomy there was a large solid cystic mass 20cm X 20cm (Fig 1) adherent to peritoneum by fine adhesions and seemed to be arising from omentum. Peritoneum and bowel loops were studded with hundreds of small fine nodules of size 2 to 5 mm, uterus and right adenexa were normal. There was no involvement of upper abdomen.

Figure 1

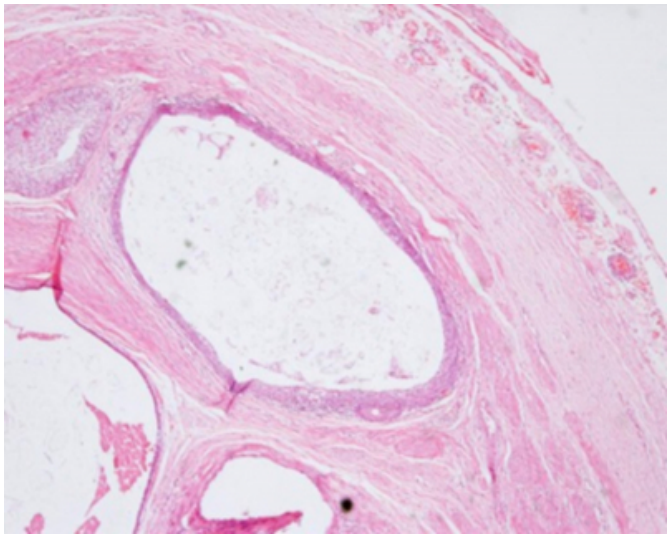
Fig 1 Large solid cystic peritoneal mass with mature elements



Mass was removed after adhesiolysis and infracolic omentectomy. Multiple biopsies were taken from peritoneal nodules but complete removal of all nodules was not possible. Cut section of mass showed presence of hair and sebum. Peritoneal nodules also contained sebaceous material. In view of her young age and findings of grossly mature elements in the mass, decision for conservative surgery was taken. Histopathology of all the specimens revealed only mature teratomas (Fig 2). No immature elements were found.

Figure 2

Fig 2 Histopathology revealing Mature Teratoma



She had been followed up for 1 year after surgery. She is having normal periods and is asymptomatic.

DISCUSSION

The presence of enlarging or new masses after treatment of a malignancy is considered to be malignant until proven otherwise. GTS is an exception where clinical or radiological enlargement of benign masses are seen during or after chemotherapy associated with normalization of tumor markers. GTS is rarely reported in ovarian GCT. Extensive medline search revealed only 47 cases of GTS following GCT of ovaries, 41 arising from Immature Teratoma. Despite benign phenotype, 2 types of complications can be observed in GTS: Mechanical compression and malignant transformation. Reported complications in literature are mesenteric compression with bowel necrosis, urinary fistula, renal failure due to ureteral obstruction, bowel obstruction and bile duct obstruction (4). In the present case also marked displacement and compression of gut with tumor mass was observed. Another possible complication is malignant transformation of the mature elements reported in 3% of GTS following NSGCT of testis(5). Recently, carcinoid tumor arising in perihepatic GTS nodule following immature teratoma of the ovary was reported (6). Therefore surgical removal is required for GTS as it is unresponsive to both chemotherapy and radiotherapy.

Imaging studies with CT or MRI are important for diagnosis of GTS (7). Suggestive findings as also seen in present case are better circumscription of the masses in relation to the surrounding tissues, onset of internal calcification, areas of fatty degeneration in association with calcification and cystic changes.

Predictors of GTS have been suggested to be: presence of mature elements in the primary tumor, predominance of immature neuroepithelial tissue and stage III disease with peritoneal spread or incomplete removal with residual disease prechemotherapy (3, 5). In the present case though first two factors were present in the primary tumor, an unusual aspect was initial stage 1A Immature teratoma. Only 3 cases have been reported where GTS developed after initial stage 1 tumor. In two of these cases, GTS developed in retroperitoneal lymphnodes where primary metastasis is likely to have been missed at the initial surgery (3,7). Only in one case GTS with peritoneal mass following stage 1A Immature teratoma has been reported (8). Diffuse peritoneal involvement in GTS has been seen only in initial stage III disease and this is usually termed as peritoneal carcinomatosis (3, 8-10). This case we believe, is the first of its kind where diffuse peritoneal seedling with mature teratomatous masses was detected after primary treatment of

stage 1A immature teratoma. As all these nodules were benign mature teratomas, we will like to introduce the term of “Peritoneal Teratomatosis” for such type of presentation. Peritoneal involvement in the present case due to initial metastasis from immature teratoma is unlikely as peritoneal cytology, peritoneal and omental biopsies were negative for metastasis. One may hypothesize microscopic spill of tumor cells during the primary surgery despite a grossly intact capsule and chemotherapy initiated growth of mature teratomas from these microscopic germ cells.

Spontaneous course of GTS is not predictable. Multiple recurrences are known to occur after Ist presentation of GTS, seen in 13 out of 47 reported cases. Therefore long term follow up is required.

The present case of GTS is being reported for its rarity and unusual presentation as “Peritoneal Teratomatosis” following stage 1A ovarian Immature teratoma. It is important to know of this possibility.

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