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Malignant mixed germ cell tumor of ovary presenting as advanced disease in an adolescent girl

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Summary

Mixed germ cell tumors are very rare in young females. Patient survival, preservation of ovarian function and fertility are becoming an important issue. A locally advanced (III), bulky malignant mixed germ cell tumour in a 12-year-old girl presented to the Department of Radiotherapy, Regional Institute of Medical Sciences, Imphal, Manipur, in January 2011 with abdominal distension for one month. On physical examination, there was a large lower abdominal mass approximately 16×14 cm^2. Abdominal and pelvic CTs showed a lobulated 19×15×10 cm soft tissue attenuation mass lesion in the pelvis extending superoanteriorly to supra-umbilical area. Laboratory investigations revealed increased serum LDH (4,245 IU/ L) and serum β-hCG (105.4 mIU/ml). Ultrasonography (USG)-guided fine needle aspiration cytology (FNAC) from left ovarian mass was suggestive of malignant germ cell tumour. In view of bulky and advanced stage, patient was administered four cycles of neoadjuvant chemotherapy (*inj.* ifosphamide 1,440 mg, *inj.* etoposide 90 mg, *inj.* cisplatin 24 mg for D1-5, four weekly) followed by left salpingo-oophorectomy with wedge biopsy of right ovary and partial omentectomy, and another two cycles of adjuvant chemotherapy with same regimen. Biopsy tissue histopathology report also confirmed mixed germ cell tumour. Patient was kept on regular follow-up and she has been disease-free for the last four years. The present authors' treatment policy in such bulky and advanced tumor in adolescents is effective.

Key words: Dysgerminomas; Non- dysgerminomas; Mixed germ cell tumor; Gonadoblastoma.

Introduction

Malignant germ cell tumors comprise approximately 2–3% of ovarian malignancies. They usually occur in younger women with a peak incidence in their 20s. In Asian and African societies, these tumors represent as high as 15% of all ovarian malignancies. These tumors are divided into dysgerminomas and non-dysgerminomas. Pure dysgerminoma and yolk sac tumors constitute 50% and 20% of all malignant germ cell tumors, respectively. Other less common types include embryonal carcinoma, immature teratomas, choriocarcinomas, polyembryomas and mixed germ cell tumors. It is often possible to cure these malignancies while preserving fertility, which is an especially important consideration given the young age of most patients. This report is of an adolescent girl with malignant germ cell tumor who presented with advanced disease.

Case Report

A 12-year-old girl presented to the Department of Radiotherapy, Regional Institute of Medical Sciences, Imphal, Manipur, in January 2011 with abdominal distension. On physical examination, there was a large mass in lower abdomen approximately with a size of 11×13 cm^2. Contrast-enhanced computed tomography (CECT) of the abdomen and pelvis showed a large, 19×15×10 cm lobulated and soft tissue attenuation mass lesion with necrotic areas in the pelvis extending superoanteriorly to the upper abdomen supraumbilical area, in the peritoneal cavity extending to the retroperitoneal space in preaortic area, displacing bowel loops laterally (Figures 1 and 2). There was minimal ascites. Laboratory investigations revealed increased serum LDH (4,245 IU/L) and increased serum β-hCG (105.4 mIU/ml). Ultrasonography (USG)-guided fine needle aspiration cytology (FNAC) from left ovarian mass was suggestive of malignant germ cell tumor.

In view of the advanced disease, neoadjuvant chemotherapy consisting of ifosfamide, etoposide, and cisplatin was given for four cycles to reduce tumor burden. Then patient underwent left salpingo-oophorectomy with wedge biopsy of right ovary with partial omentectomy. Postoperative histopathology confirmed as mixed germ cell sex-cord stromal tumor (gonadoblastoma) with extensive post-chemotherapy related changes (Figure 3). Patient received adjuvant chemotherapy with same regimen for two cycles. She was kept on regular follow-up with three monthly general physical examinations, USG whole abdomen, and serum tumor markers which were normal. The patient is currently in remission for a period of four years.

Discussion

Malignant ovarian germ cell tumors are rare, accounting for 2–3% of all ovarian cancers and develop usually in young women. Five to 10% are associated with gonadoblastomas and develop in patients who are sexually mal-developed. Germ cell tumours often show combina-

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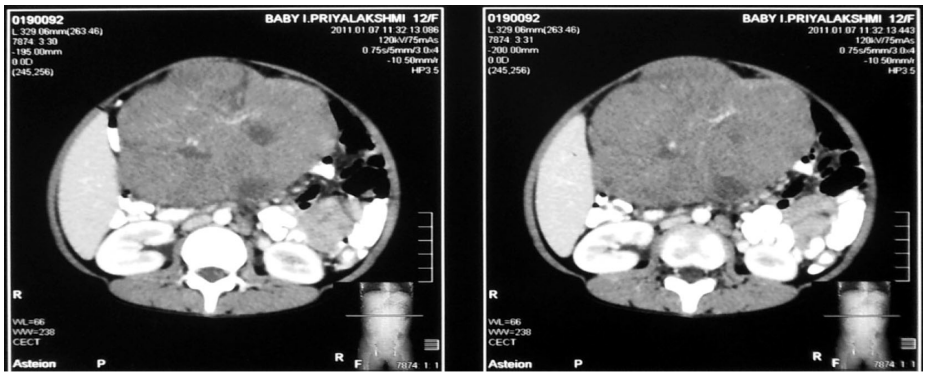

Figure 1. — CECT of abdomen shows heterogeneously enhancing soft tissue attenuation mass lesion in peritoneal cavity extending to retroperitoneal space.

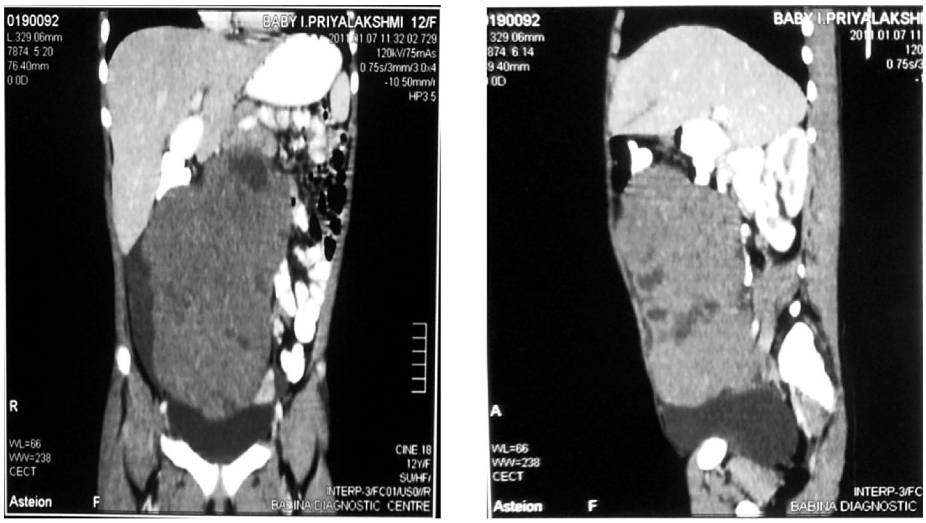

Figure 2. — CECT abdomen showing enormous mass with mixed echogenicity, displacing bowel loops and minimal ascites.

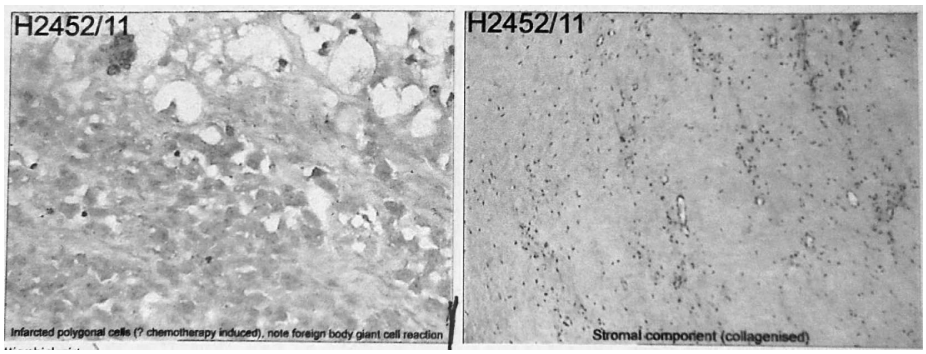

Figure 3. — HPE of left ovarian mass showing mixed germ cell sex-cord stromal tumor (gonadoblastoma) with extensive post-chemotherapy related changes.

tion of various elements- referred to as malignant mixed germ cell tumors, which occur in 8% of cases of germ cell tumors.

Most common presenting symptoms are abdominal pain and distension of abdomen [1-3]. Usual presentation is unilateral ovarian enlargement [1, 2, 4]. Bilateral ovarian involvement was also noted, the incidence of which varied from 3–19% [1, 2, 5]. Radiological examination of a germ cell tumor shows a complex mass with solid and cystic components. Abdominal radiographs may show a soft tissue mass arising from the pelvis. Sonography is needed to demonstrate the mixed solid and cystic components. Most common combination is that of dysgerminoma and yolk sac tumors [1-4]. A component of yolk sac tumor carries poor prognosis [6]. Tumor with any germ cell element other than yolk sac carries good prognosis [1-3].

Surgery is the initial treatment for the majority of patients with malignant germ cell tumor of the ovary [7]. Procedures include unilateral oophorectomy, bilateral salpingo-oophorectomy, and intra-abdominal tumor debulking, with the goal of

removing as much gross tumor as possible while preserving fertility. All patients except those in FIGO/AJCC Stage I require neoadjuvant or postoperative platinum-based combination chemotherapy [8, 9]. Cisplatin, bleomycin, and etoposide and vincristine, dactinomycin, and cyclophosphamide (VAC) are commonly used regimens. With the advent of combination chemotherapeutic regimens, the overall disease-free survival rates are > 95% [10].

Mixed malignant germ cell tumor of the ovary is a highly aggressive neoplasm that can present as disseminated disease at initial diagnosis. A high index of suspicion is needed and early intervention for any adolescent girl presenting with a rapidly enlarging pelvic mass is required. In view of malignant germ cell tumors occurring almost exclusively in young females, preservation of their ovarian function and fertility is becoming an important, although controversial, issue in gynaecologic oncology.

As the present patient presented with advanced Stage III with massive tumor, there was increased chance of distant metastasis and possibility of tumor spillage during surgery. She was unsuitable for surgery and hence neoadjuvant chemotherapy in view of preserving the fertility was given followed by surgery and postoperative chemotherapy [11, 12]. Because of the aggressive treatment protocol, the patient has achieved remission.

References

[1] Gershenson D.M., Del Junco G., Rutledge F.N.: "Mixed germ cell tumours of ovary". *Obstet. Gynecol.*, 1984, *64*, 200.

[2] Kurman R.J., Norris H.J.: "Malignant mixed germ cell tumours of the ovary: A clinical & pathologic analysis of 30 cases". *Obstet. Gynecol.*, 1976, *48*, 579.

[3] Kurman RJ, Norris H.J.: "Malignant germ cell tumours of ovary". *Hum. Pathol.*, 1977, *8*, 551.

[4] Zuntova A., Sumerauer D.: "Mixed germ cell tumours of the ovary in childhood and adolescence". *Cesk. Patol.*, 2004, *40*, 92. [Article in Czech]

[5] Yilmaz F., Gul T., Uzunlar A.K.: "Malignant ovarian germ cell tumours: analysis of 32 cases". *Eur. J. Gynaecol. Oncol.*, 2003, *24*, 569.

[6] Ayhan A., Tuncer Z.S., Yanik F.: "Malignant germ cell tumours of the ovary:Hacettepe hospital experience". *Acta Obstet. Gynecol.*, 1995, *74*, 384.

[7] Gershenson D.M.: "Management of ovarian germ cell tumors". *J. Clin. Oncol.*, 2007, *25*, 2938.

[8] Segelov E., Campbell J., Ng M., Tattersall M., Rome R., Free K., *et al.*: "Cisplatin-based chemotherapy for ovarian germ cell malignancies: the Australian experience". *J. Clin. Oncol*.,1994, *12*, 378.

[9] Dimopoulos M.A., Papadopoulou M., Andreopoulou E., Papadimitriou C., Pavlidis N., Aravantinos G., *et al.*: "Favorable outcome of ovarian germ cell malignancies treated with cisplatin or carboplatin-based chemotherapy: a Hellenic Cooperative Oncology Group study". *Gynecol. Oncol.*, 1998, *70*, 70.

[10] Lu K.H., Gershenson D.M.: "Update on the management of ovarian germ cell tumors". *J. Reprod. Med.*, 2005, *50*, 417.

[11] Kumar L., Talukdar S., Hariprasad R., Gupta A., Mookerjee A., Kumar S., *et al.*: "Is there a place for neoadjuvant chemotherapy in the management of advanced malignant germ cell tumors of ovary? *J. Clin. Oncol.*, 2011, *29*, 5079

[12] Maheshwari A., Gupta S., Tongaonkar H.B.: "Malignant ovarian germ cell tumours: long-term treatment outcome". *J. Clin. Oncol.*, 2005, *23*, 5132.

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