

Ovarian Dysgerminoma with Metastasis to Spinal Column (Case Report)

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Abstract: Ovarian cancer is fifth in cancer deaths among women with gynecologic malignancy. This tumor have good initial responses to surgery and chemotherapy in 80% of cases, but >75% of patients die due to complications of disease progression. A female, 25 years old, admitted in Fatemieh hospital with complaints of lower limbs paresthesia from 6 h before admission in hospital. She had paresthesia in lower limbs that was increased gradually and urinary incontinence was added. Within 2 h after admission, she became paraplegic. She was treated with dexamethasone then was referred to a neurosurgeon for urgent laminectomy. Neurosurgeon reported spinal cord invasion with a tumoral mass. Pathologic diagnosis was metastatic dysgerminoma. Then, radiotherapy and chemotherapy was done. Metastasis of ovarian tumor to spinal cord is rare and need more aggressive multidisciplinary treatment approach.

Key words: Dysgerminoma, ovary, metastasis, spinal column, ovarian cancer, treatment

INTRODUCTION

Germinoma is a malignant tumor of the germinal tissue that originate from the gonads, mediastinum or pineal region. Dysgerminoma usually affects the teenage girls or young women (Cotran *et al.*, 1996). It consist of 2% ovarian neoplasm and 50% of malignant germ cell neoplasms (Zalel *et al.*, 1996). Gonadal dysgenesis and pseudohermaphrodite may be setting for some of patients. It can be found either in a pure form or mixed with other germinal elements (Cotran *et al.*, 1996; Zalel *et al.*, 1996). Therefore, in children with a pelvic mass, the karyotype should be determined (Cotran *et al.*, 1996).

Most ovarian cancers occur during the menopausal and perimenopausal years (i.e., 50-59 years), but dysgerminomas occur frequently in the pediatric population (Cotran *et al.*, 1996; Zalel *et al.*, 1996). Dysgerminoma is the most common germ cell tumor in teenage girls. Ovarian Germ Cell Tumors (OGCTs) usually arise in women between 10 and 30 years old. The peak age of incidence is 19 years and mean age is 22 years old (Disaia and Creasman, 1997). Most patients present with pain and abdominopelvic mass, pelvic fullness, early satiety, urinary frequency and dysuria (Disaia and Creasman, 1997; Gershenson *et al.*, 1986). In surgery field, dysgerminoma present as a lobulated homogenous mass that is firm and cream colored or pale tan, fleshy lesion and it usually hasn't hemorrhage or necrosis (Gershenson *et al.*, 1986).

Dysgerminoma contains syncytiotrophoblastic giant cells. It produces placental alkaline phosphatase and Lactate Dehydrogenase (LDH). LDH can be used for postoperative follow-up care or for controlling the success of adjuvant therapy. These tumors have a greater tendency for hematogenous metastasis than do epithelial tumors and therefore, liver and lung involvement can be observed. It has propensity for lymphatic dissemination so (Harvey *et al.*, 1992). There are case reports of intramedullary spinal cord metastasis in seminoma (Gose *et al.*, 1984; Fernandez *et al.*, 1997; Hoskins *et al.*, 1992; Isselbacher *et al.*, 1994). Metastasis from primary central nervous system to spinal cord have seen but haven't seen from ovarian dysgerminoma. Of course, there is a report of ovarian dysgerminoma with spinal cord metastasis in dog (Fernandez *et al.*, 1997).

After diagnosis a conservative staging procedure should be performed. About 67% came as early stage disease (stage IA) (Thompson and Rock, 1992; Berek and Hacker, 2004; Talerman, 1994; Levato *et al.*, 1995). Stage 3 lesions account for 25-30% of tumors and retained (stage 2 and 4) tumors are uncommon (Thompson and Rock, 1992). Dysgerminomas usually involve one ovary and confined to it but 10-15% present with bilateral involvement. The main treatment of patient with early dysgerminoma is surgical. Resection of the primary lesion and proper surgical staging must do (Thompson and Rock, 1992; Berek and Hacker, 2004; Talerman, 1994). In

tumors that confined to the ovary and <10 cm, cure can be achieved with surgery alone. In others chemotherapy and/or radiation are administered (Levato *et al.*, 1995; Schwartz and Morris, 1988; Williams, 1998). Radiotherapy is useful for metastatic lesions (by palliative goal). In patients, whose contralateral ovary has been preserved, disease can develop in 5-10% of another ovary over the next 2 years (Lee *et al.*, 2009; Harland *et al.*, 2009; Kumar *et al.*, 2008).

If the tumor involvement is only unilateral (confined to the ovary), the 5 years survival, rate is 96% (Pectasides *et al.*, 2008). If extension occurs beyond the ovaries, the 5 years survival, rate is 63% (Gose *et al.*, 1984). In pregnant women, pregnancy does not alter the prognosis of dysgerminoma, but torsion and rupture may increase the incidence of spontaneous abortion or preterm delivery (Thompson and Rovk, 1992). Adjuvant treatment with chemotherapy include BEP regimen (bleomycin, etoposide and cisplatin) is reserved for all patients except for those who have stage IA disease. With good treatment, overall survival rate is 85% (Zalel *et al.*, 1996).

MATERIALS AND METHODS

We report 25 years old woman with unusual presentation of ovarian tumor.

Case report and results of data: Two years ago, 25 years old white married female, referred to hospital due to abdominal distension and palpable mass in right lower quadrant. Diagnostic work-up were done and with impression of ovarian tumor, right salpingo-oophorectomy was done. Microscopic examination showed tumoral tissue composed of discohesive cells with irregular border, some contain prominent nuclei and thin fibrinolytic stroma infiltrated by chronic inflammatory cells that compatible with dysgerminoma. Immuno Histo-Chemistry (IHC) report was positive for placental alkaline phosphatase and C-Kit and negative for HCG, epithelial membrane antigen, Alpha fetoprotein, cytokeratin and CD30. It was in favor of dysgerminoma. At that time, she was advised to chemotherapy, but she didn't accept treatment plan.

After near 2 years, she hospitalized due to chest pain, fever and dyspnea. Chest X-ray and chest CT scan showed pleural effusion and consolidation in right middle and lower lobe (Fig. 1-3). Surgery was done. Microscopic examination shown tumoral tissue composed of malignant neoplastic cells with round vesicular nuclei and nucleoli arranged in nests. Pathologic diagnosis was metastatic dysgerminoma (Fig. 4). One week after surgery, she came with lower limbs paresthesia. In a

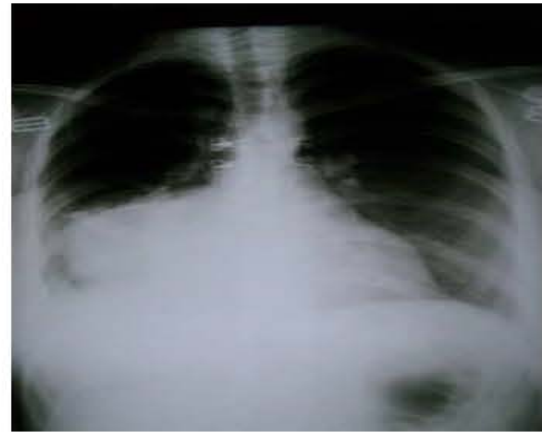


Fig. 1: Chest X-ray

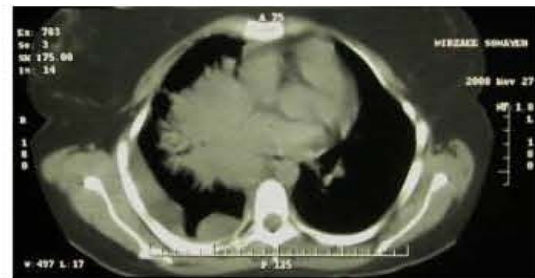


Fig. 2: Chest CT scan



Fig. 3: Spinal MRI

few hour, she had penderousness feeling in lower limbs was increased gradually and urinary incontinence was added.

In examination, muscle force of lower limbs decreased. Within 2 h, she became paraplegic. MRI of the thoracic spine revealed evidence of ill defined, homogeneous of the enlarged mass in the right side of the mid thoracic spine at T7-T9 level (Fig. 5). There was enhancement of the invasive lesion to the body of the T8 vertebra. These MRI were more suggestive for extradural metastatic lesion with invasion to the intradural

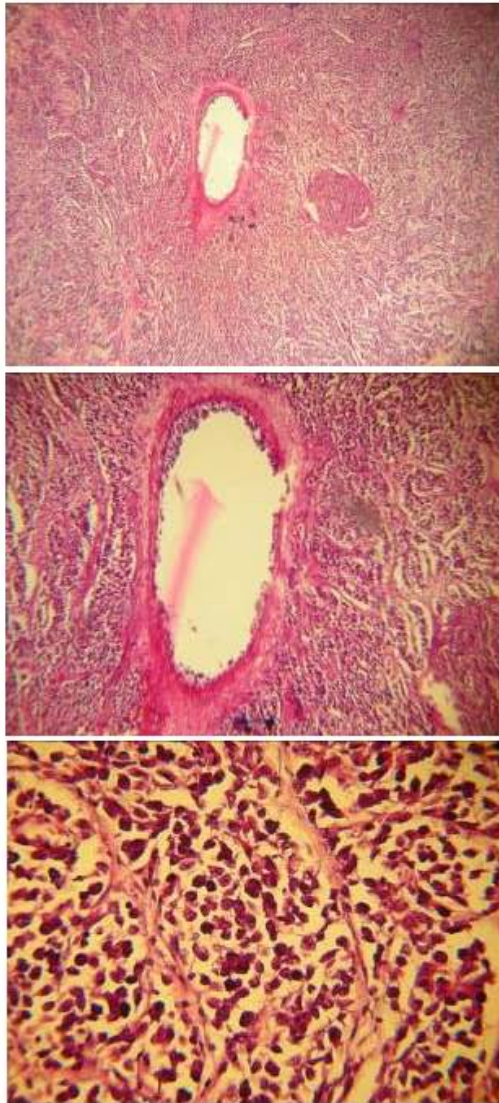


Fig. 4: Pathology of ovarian dysgerminoma magnification 40, 100 and 400X, respectively



Fig. 5: MRI of spine (T8)

structures. She was treated with dexamethasone immediately and then was referred to a neurosurgeon for

urgent laminectomy. Neurosurgeon reported spinal cord invasion with a tumoral mass. Then radiotherapy was done. Pathologic diagnosis was metastatic dysgerminoma. The patient was in stage IV according to FIGO system.

The latest tumor markers result was:

LDH = 1079, β HCG, AFP, CA125 = Normal

After surgery and radiotherapy, chemotherapy was done. BEP protocol (Bleomycin, Etoposide and Cisplatin) was used. LDH level decreased after 2 cycle's chemotherapy. Now, the patient is in partial remission and neurologic and pulmonary symptoms are appropriately decreased.

DISCUSSION

The case suffered from lung, bone and spinal cord involvement. Ovarian germ cell tumors are uncommon because account for only about 5% of all malignant ovarian neoplasms (Zalel *et al.*, 1996). The most common malignant germ cell tumor of the ovary is dysgerminoma but stage 4 this tumor is relatively uncommon (Lee *et al.*, 2009; Harland *et al.*, 2009; Kumar *et al.*, 2008). Then, it seems that cases of dysgerminoma in stage 4 tumor must report. These reports can help us for better diagnosis and treatment. Dysgerminoma is the most common germ cell tumor in teenage girls (Harland *et al.*, 2009; Kumar *et al.*, 2008). Ovarian Germ Cell Tumors (OGCTs) usually arise in women between 10 and 30 years old (Pectasides *et al.*, 2008).

The case was 25 years woman at diagnosis and it usual age for dysgerminoma. Dysgerminoma contains syncytiotrophoblastic giant cells. It produce placental alkaline phosphatase and lactate dehydrogenase. IHC was positive for placental alkaline phosphatase and she had high serum LDH level that decreased with treatment. Most patients present with pain and an abdominopelvic mass, as the case. She came with abdominal pain and mass. There were extradural metastatic lesions with invasion to the intradural structures and body of the T8 vertebra. There were reports of spinal cord metastasis from central nervous system dysgerminoma, but extradural and intradural structures metastasis from ovarian dysgerminoma is very rare.

We thought that extradural and intradural metastasis maybe an extension of osseous metastasis but we can't proved or rule out it. Therefore, we reported it. Osseous metastasis was reported but is uncommon. The case had metastasis to body of the vertebra. The patient's suffered from lung involvement. Liver and lung involvement can be observed in ovarian dysgerminoma. As previously noted,

however, stage 4 of disease is uncommon. Peritoneal surfaces involvements (stage 3) often occur in ovarian dysgerminoma, but the patient didn't have any peritoneal metastasis and liver by spiral CT scan. After two course chemotherapy with Bleomycin, Etoposide and Cisplatin partial remission in pulmonary and neurologic symptom and sign achieved. Serum level of LDH decreased so.

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