Case Report

Malignant mixed germ cell ovarian tumor in pregnant female

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ABSTRACT

Ovarian germ cell tumours comprise approximately 15% to 20% of all ovarian neoplasms. In pregnant females, its incidence is very low. They arise from primordial germ cells derived from the embryonal gonad. Malignant germ cell tumours comprise less than 5% of all ovarian neoplasms. Most malignant ovarian neoplasms in pregnant women are at early stages and are associated with good prognosis both for the mother and for the neonate. Histologic subtypes and prognosis do not differ from tumors not associated with pregnancy. Careful initial surgery with adequate staging biopsies followed by combination chemotherapy can greatly improve the prognosis of these patients. We present a case of malignant mixed germ cell tumor in a pregnant female who presented with abdominal mass after delivering a normal child. Histological and biochemical tumour markers confirmed it to be malignant mixed germ cell tumor.

Keywords: *Malignant mixed germ cell tumour, choriocarcinoma, pregnancy*

Introduction

Ovarian germ cell tumours comprise approximately 15% to 20% of all ovarian neoplasms. Malignant germ cell tumours comprise less than 5% of all ovarian neoplasms. The incidence of malignant ovarian germ cell tumours range from 1 to 6 percent as reported in the West and from 8 to 19 percent in Asia. [1] In pregnant females, its incidence is very low. We present a case of malignant mixed germ cell ovarian tumour comprising of embryonal carcinoma, yolk sac tumour, immature teratoma and choriocarcinoma arising during pregnancy and is being reported because of its rarity.

Case Report

A 22 year old, para 2 live 2 woman presented with abdominal distension, loss of appetite and nausea for five days in Gynecology outpatient department of our institute. She gave history of normal full term vaginal delivery in a private hospital. She was asymptomatic during her pregnancy. On examination, she had distended abdomen with a firm, non-pulsatile, palpable mass in the pelvis extending up to xiphisternum. She had mild periumbilical tenderness, but no guarding or rebound tenderness. There was no inguinal lymphadenopathy.

Ultrasonography revealed a large pelvic mass on right side. A thoracic, abdominal and pelvic contrast enhanced computed tomography (CECT) gave the impression of right sided abdomino-pelvic mass with a possibility of ovarian origin alongwith ascites & omental infiltration but no abdominal lymphadenopathy. However abdominal ultrasound done 36 days before delivery revealed no abnormal mass. Fine Needle Aspiration Cytology (FNAC) done under the guidance of computed tomography (CT) showed frank adenocarcinoma.

Routine pre-operative hematological and biochemical investigations were within normal limits except for anaemia (haemoglobin 9.6 g/dL). The patient underwent exploratory laparotomy for heterogeneous right ovarian mass. As it was a huge mass, a debulking operation was done along with total abdominal hysterectomy and bilateral salphingoopherectomy. Also a part of adherent loop of gut and omentum suspected to be invaded by the tumour were removed.

Pathological Findings

GROSS: The specimen was sent for histopathological examination to the Department of Pathology, in three containers. In the first container there was piecemeal material collectively measuring 35 x 25 cms, size of tissue pieces ranged from 2-15 cm, mostly they were solid, some appeared flap like. Cut surface was soft, gray white and necrotic at places. (Fig. 1 A)

Fig. 1(A) Piece meal tumour tissue

Uterus with one tube and the other ovary in second container, revealed no remarkable gross abnormal finding. (Fig. 1B, C)

Fig. 1(B) Hysterectomy specimen

Fig. 1(C) Other tube & ovary

A loop of gut and omentum in third container, on cutting showed thickened gut wall (Fig. 1D) and brownish areas on its mesenteric side (serosa) and in the omentum.

Fig. 1(D) Loop of gut

Microscopy

Several pieces and multiple H & E stained paraffin sections were examined. They revealed varying histomorphological features in different regions. Mature and immature ectodermal, mesodermal and endodermal tissues were seen. These included features of endodermal sinus tumour comprising of small cystic spaces lined by irregular flattened epithelium into which projects glomerulus-like tufts with a central vascular core (Figure 2A).

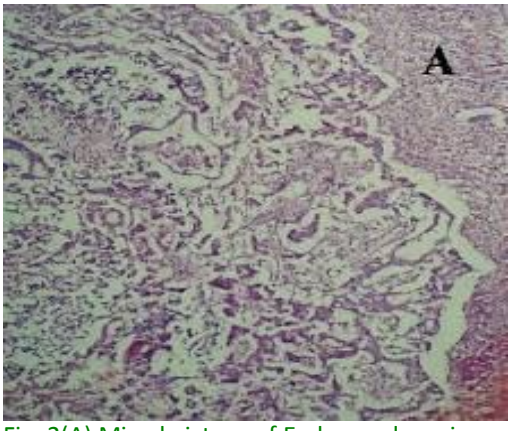

Fig. 2(A) Mixed picture of Embryonal carcinoma & yolk sac tumour (x100) (H & E Stain)

In the adjoining areas, there were present teratoid (hyaline) bodies i.e. eosinophilic intracytoplasmic structures pushing nucleus towards periphery (Figure 2B). Some pieces showed mature keratinized squamous epitheliumIn with laminated keratin (Figure 2C) and in other areas, the picture resembled mesonephroma i.e. cells with clear cytoplasm.

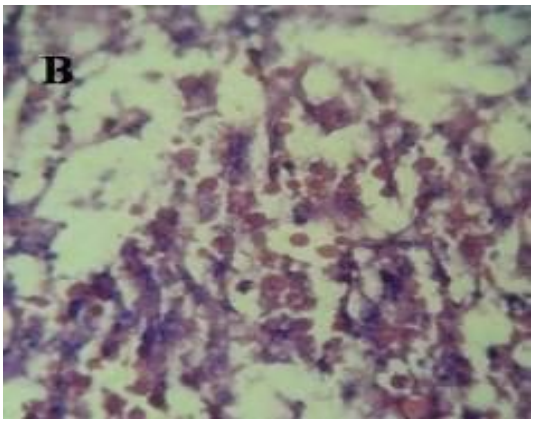

Fig. 2(B) showing hyaline globules indicating sac component (x 400) (H & E Stain)

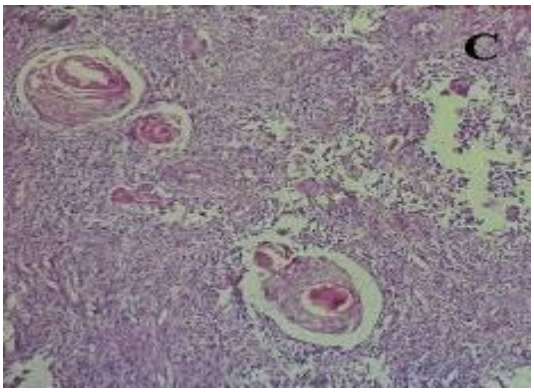

Fig. 2(C) Scattered keratin perals and squamous lining of mature neural tissue (x 400) (H & E Stain)

Trophoblastic tissue with syncytial cells, immature neural tissue, undifferentiated stromal elements, at places, giving sarcomatous picture with many mitotic figures and bizarre cells, were also seen (Figure 2D). Extensive areas of hemorrhage and necrosis were present. Immunohistochemical stain (alpha fetoprotein) for endodermal sinus tumour and beta HCG for trophoblastic tissue was

positive. However serum HCG levels in postoperative period were within normal limits.

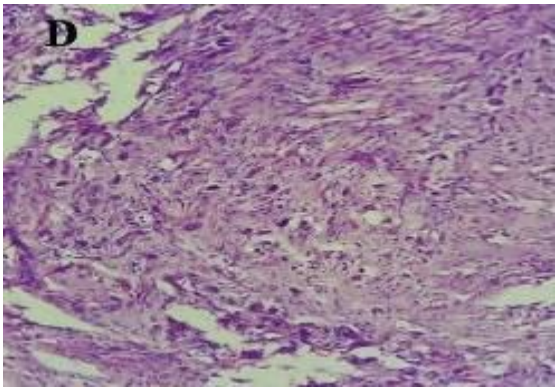

Fig. 2(D) Immature neural tissue (x 400) (H & E Stain)

Pieces from the intestinal serosa and parametrium showed invasion by malignant tissue because of approximation of these organs to tumour. Endometrium, myometrium, fallopian tube and the other ovary were unremarkable.

Histopathological features, immuno-histochemical staining and biochemical tumour markers confirmed the diagnosis of Malignant Mixed Germ Cell Tumour comprising of immature teratoma, embryonal carcinoma, endodermal sinus tumour, choriocarcinoma and mesonephroid tumour, along with invasion into intestinal serosa and parametrium; the tumerogenesis had started during pregnancy.

Discussion

Ovarian germ cell neoplasms constitute the second largest group accounting for 15 to 20 percent of all ovarian neoplasms. Gynaecological malignancies frequently occur in women of reproductive age and are estimated to complicate approximately 1 in 1000 pregnancies. The incidence of malignant ovarian tumors is about 1:10,000 to 1:40,000 pregnancies. The incidence of gynaecological malignancies during pregnancy is expected to rise as more women delay childbearing into their later reproductive years, and maternal age is the most powerful predictor of cancer risk. These tumors are relatively asymptomatic and are mostly detected accidentally during routine examination, ultrasound or a caesarean section at term. [1] Cancer during pregnancy, more common in younger women, posed treatment challenges and greater fetal risk during first trimester but acceptable risk in the second and third trimester. [2]

Immature teratomas of the ovary arise primarily in young women between 10 and 30 years of age with median age 17 years. Although germ cell tumors occur more frequently in females than males, they are usually benign. (mature teratomas or “dermoid” tumors) The most common symptom was abdominal pain. [3]

The overall incidence of ovarian cancer in pregnancy is very low (1 in 12500–25000) and complicating the pregnancy in 0.073% /1000 pregnancies. [4] The yolk sac tumour or endodermal sinus tumour is the second most common germ cell tumour, accounting for 20% of all cases.[1] Embryonal carcinoma, choriocarcinoma, and polyembryoma cell types account for the remaining 5–10%, rarely exist in pure form, and have the worst prognosis. [5]

Clinically, a substantial majority of patients with germ cell tumours present with abdominal pain, abdominal distension or a pelvic mass. A few patients exhibit isosexual precocity, presumably due to HCG

production by the tumour. [1] In our case, the patient presented with abdominal distension but there was no evidence of precocious puberty. α-fetoprotein and human β chorionic gonadotrophin are probably the best known tumor markers in clinical practice and are invaluable in the diagnosis, treatment, and follow-up of ovarian germ cell tumors. [6]

Ovarian germ cell tumors occur in young individuals and are frequently fulminant if initial treatment is inadequate. Over the past 3 decades, survival rates for germ cell tumors have dramatically improved, coincident with more aggressive surgical staging and combination chemotherapy. [7] Surgery is the initial treatment for the majority of patients with malignant germ cell tumour of the ovary. Procedures include unilateral oophorectomy, bilateral salpingo-oophorectomy, and intra-abdominal tumour de-bulking, with the goal of removing as much gross tumour as possible while preserving fertility. [8] Histologic subtypes and prognosis do not differ from tumors not associated with pregnancy. Most malignant ovarian neoplasms in pregnant women are at early stages and are associated with good prognosis both for mother and for the neonates. [9]

Most malignant mixed germ cell tumour of ovary in pregnant women at early stages and are associated with good prognosis both for the mother and for the neonate. Histological subtypes and prognosis do not differ from tumors not associated with pregnancy. Careful initial surgery with adequate staging biopsies followed by combination chemotherapy can greatly improve the prognosis of these patients. The case is presented because of rarity of such malignant tumour during pregnancy.

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