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MALIGNANT MIXED GERM CELL TUMOUR OF OVARY WITH COMPONENTS OF DYSGERMINOMA AND YOLK SAC TUMOUR: A CASE REPORT

KEY WORDS:
Dysgerminoma, Yolk sac tumour, Choriocarcinoma.

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ABSTRACT

Germ cell tumours constitute about 15% to 20% of all ovarian neoplasms. Malignant germ cell tumours comprise less than 5% of all ovarian neoplasms. Malignant mixed germ cell tumour of ovary is a type of tumour that consists of two or more malignant germ cell tumour component. Most of the malignant mixed germ cell tumours consist of dysgerminoma accompanied by yolk sac tumour, immature teratoma or choriocarcinoma.

We reported a case of malignant mixed germ cell tumour of ovary in July, 2021 in Tezpur Medical College, Tezpur consisted of dysgerminoma as major component and yolk sac tumour as minor component in a 20-years-old Assamese woman. The patient presented with pain abdomen, abdominal mass and irregular menstrual bleeding. USG and MRI showed a huge mass arised from right ovary with solid and cystic component. Serum tumour markers AFP and LDH were raised with normal beta HCG level. The patient underwent fertility sparing surgery (right sided oopheractomy) and chemotherapy. The histopathological examination of the tumour revealed features of dysgerminoma as major component and yolk sac tumour as minor component without metastasis. Immunohistochemical staining showed OCT4, SALL4 and PLAP positive for the dysgerminoma component and AFP, CD 117, CK and Glypican 3 positive for the yolk sac component.

Malignant mixed germ cell tumour of ovary is highly aggressive tumour. Early intervention such as fertility sparing surgery and chemotherapy is highly essential for adolescent girl and young women suffering from this tumour.

BACKGROUND

Ovarian germ cell tumour arises from primordial germ cell that is derived from the embryonal cell of the embryonal gonads. Germ cell tumours constitute about 15% to 20% of all ovarian neoplasms. About 95% of all germ cell tumours of ovary are benign cystic teratomas, but the remainder, which are found principally in children and young ladies, have higher incidence of malignant behaviour and pose problem in histopathological diagnosis in therapy. The younger the patient, the more likely the germ cell tumour will be malignant.

Malignant germ cell tumours of ovary comprise less than 5% of all ovarian neoplasms. The incidence ranges about from 1% to 6% in western countries and 8% to 19% in Asian countries. The most common form of malignant germ cell tumour of ovary is dysgerminoma (80%) followed by yolk sac tumour ,also called as endodermal sinus tumour, (70%) and immature teratoma (53%)[1] . Embryonal carcinoma, choriocarcinoma and polyembryoma are very rare type of malignant germ cell tumour of ovary. Tumour markers such as AFP, HCG and LDH contribute to the diagnosis, prognosis and follow up of malignant germ cell tumour disease [2].

A combination of various components of germ cell tumour occurs in about 8% of germ cell tumour of ovary. They are referred to as mixed germ cell tumour of ovary. They may contain various combinations of two or more types of germ cell tumour.

Malignant mixed germ cell tumour of ovary is a type of tumour that consists of two or more malignant germ cell tumour component. Most of the malignant mixed germ cell tumours consist of dysgerminoma accompanied by yolk sac tumour. Other combination of malignant components can also occur but in decreasing order. Tumour markers such as AFP, beta HCG and LDH contribute to the diagnosis, prognosis and follow up of the disease. IHC like CD117, CD113, SALL4, PLAP, AFP, CK, OCT3/4, TCL1 and Glypican3 has utility for malignant germ cell of ovary [3].

There are very few case reports of malignant mixed germ cell tumour of ovary with different combinations of malignant components in literature. This report describes a case of malignant mixed germ cell tumour of ovary consisted of dysgerminoma as the major component and yolk sac tumour as the minor component in a 20-years-old Assamese woman.

Case Report

A 20-years-old Assamese lady presented in the Gynaecology OPD of Tezpur Medical College and Hospital, Tezpur with chief complains of pain abdomen, abdominal mass of one month duration in the month of July, 2021. She also complained of loss of appetite, weakness and weight loss. Her menstrual history revealed that she attended menarche at the age of 14 years and her cycle was regular with normal flow in the past but had irregular and heavy bleeding in last three cycles.

Her physical examination revealed severe pallor and pedal oedema. Her vital signs showed pulse rate 120/min (tachycardia), blood pressure 100/70 mm Hg and respiratory rate 18/min. On abdominal examination, a huge soft and solid mass up to level of xiphisternum could be palpated. There was no rebound tenderness.

Investigation revealed haemoglobin 6.5 gm/dl, TC-7700/cumm, platelet count- 1.5 lakh/cumm and peripheral blood smear showed picture of microcytic hypochromic anemia. Serum biochemistry was normal. USG of whole abdomen and pelvic organ revealed a huge solid cystic mass in the right ovary occupying the whole abdomen. Right ovary was not separately visualised from the mass but the left ovary was normal looking. There was no evidence of free fluid in the abdomen cavity. Magnetic resonance imaging (MRI) revealed a right ovarian tumoral mass measuring about 18x12x16 cm with irregular seams, on iso-signal T1, peripheral hypersignal and central hyposignal T2 in relation with central necrosis with no mass in the left ovary and no retroperitoneal lymhadenopathy. Serological alpha-fetoprotein (AFP) level (489.9 ng/ml) and LDH level (3600 IU/ml) was too high with normal level of beta- human chorionic gonadotropin (beta HCG) (7.67 mU/ml).

Fertility sparing surgery (right sided oopheractomy) was done. Intraoperatively there was a huge mass arising from the right ovary with intact capsule. There was no fluid in the peritoneal cavity and peritoneal washings were taken. Abdominal cavity was explored and there was no evidence of malignant disease elsewhere. Left sided ovary and uterus was normal looking. Tumour was removed and biopsy was taken from the left ovary, infracolic omentectomy and pelvic and paraaortic lymphadenectomy for staging of the tumour. Frozen section could not be done as the machine was out of order. The surgical specimens were sent for HPE and the

peritoneal washing fluid for cytopatholgical examination for malignant cells to the Pathology department of the institute. Biopsy specimens and the peritoneal washing fluid was received and labelled properly.

On gross examination, the tumour measured 18x12x16 cm and weighed 2100 grams. External surface was smooth and bosselated with an intact capsule. Serial cut section revealed a tumour with solid and cystic variegated cut surface showing dark-brown, grey-brown, myxoid and necrotic areas (Figure-1).

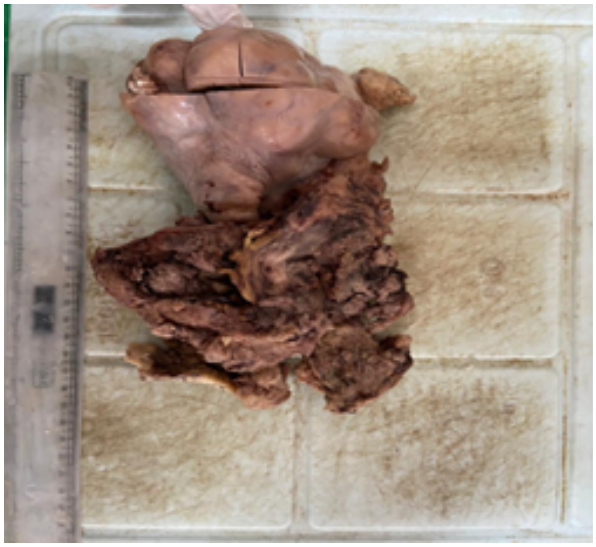
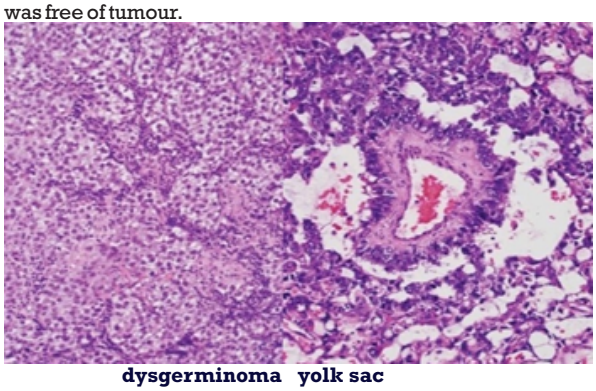


Fig-1: Photograph showing the gross of the tumour

The surgical specimen from the patient was fixed in 10 % buffered formalin and processed for paraffin wax embedding. Multiple sections of different fragments were stained with haematoxylin and eosin.

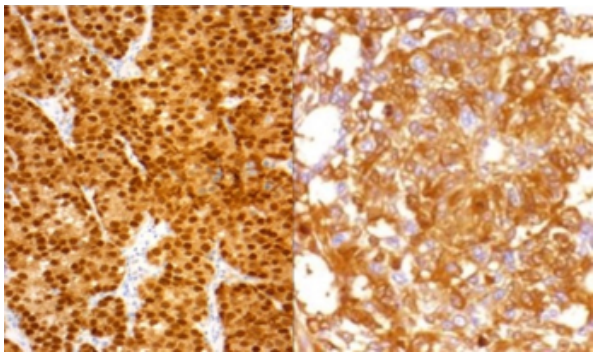
Microscopy showed a mixed germ cell tumour of ovary with variable components (Figure-2). Predominant component was dysgerminoma showing uniform vesicular tumour cells arranged in sheet separated by fibrous septa. The tumour cells have with prominent cell membrane, clear granular cytoplasm and large nuclei with one or more prominent nucleoli. There is lymphocytic infiltration in the fibrous septa. Along with this, there was yolk sac tumour component showing loose reticular pattern and rounded papillary processes with central capillary (Schillar-Duval bodies). No extra capsular invasion was seen. Lymph nodes and omentum was free of tumour.



dysgerminoma yolk sac

Fig-2: Photograph showing dysgerminoma and yolk sac component in the HPE of the malignant mixed germ cell tumour (H & E stain)

Immunohistochemical staining showed OCT4, SALL4 and PLAP positive for the dysgerminoma component and AFP, CD 117, CK and Glypican3 positive for the yolk sac component (Figure-3). No malignant cells were seen in the sent peritoneal washing fluid.



OCT4+ AFP+

Fig-3: Photograph showing OCT4+ in the dysgerminoma component and AFP+ in the yolk sac component in the IHC staining of the malignant mixed germ cell tumour

Final histopathological diagnosis was- Malignant mixed germ cell tumour of ovary with components of dysgerminoma and yolk sac tumour. The diagnosis of malignant mixed germ cell tumour comprising dysgerminoma as major component and yolk sac tumour as minor component was made based on the histopathological appearance, immunohistochemical staining positivity and elevated serological level of LDH and AFP with normal beta HCG level.

DISCUSSION

Germ cell tumours of ovary are not uncommon. But malignant mixed germ cell tumour is a rare variety and a very few such cases has been reported in literature. Most of the malignant mixed germ cell tumours consist of dysgerminoma accompanied by yolk sac tumour. Other combination of malignant components such as choriocarcinoma, embryonal carcinoma, mature teratoma can also occur but in decreasing order. Zuntova et al, 2004[4] reviewd mixed germ cell tumours between 1979 and 2002 and found them to be rare. All were yolk sac tumours with dysgerminoma and embryonal carcinoma and choriocarcinoma. Koshy et al, 2005[5] found mixed germ tumours to be rare with a combination of dysgerminoma and yolk sac tumour. Talerman et al, 2013[6] reported 13 patients of ovarian germ cell tumours, in which 8 were mixed germ cell tumours consisting of yolk sac tumour with dysgerminoma, embryonal carcinoma and choriocarcinoma.

Malignant mixed germ cell tumour mostly occurs in young girl and very young women (2nd and 3rd decade of life). Most common clinical presentation includes abdominal mass with or without pain abdomen or fever. Our case was of 20 years-age presented with clinical feature of abdominal mass, pain abdomen and irregular and heavy bleeding in cycles.

The gross appearance of this tumour varies according to the components of the tumour. Imaging modalities can be used to establish the diagnosis but different types of tumour show overlapping features and the definitive diagnosis is made by histopathology. AFP and LDH are markers for yolk sac tumour and ALP and LDH for dysgerminoma. Our case showed high serological level of AFP (for the yolk sac component) and high LDH (for the dysgerminoma component) with normal beta HCG level. Hypercalcemea may occur in dysgerminoma. Frozen section is necessary to see the invasion as germ cell tumours are highly aggressive. Immunohistochemical staining like AFP, SALL4, LIN 28, FOXL2, CD10, Glypican 3, inhibin and villin are necessary for yolk sac component and OCT3/4, CD117, PLAP, SALL4 for dysgerminoma component. Our case showed immunohistochemical staining positive for OCT4, SALL4 and PLAP (for the dysgerminoma component) and AFP, CD 117, CK, and Glypican3 (for the yolk sac component). Trinh DT et al, 2012[7] described the utility of

CD117, CD113, SALL4, OCT4, TCL1 and Glypican3 in malignant germ cells of the ovary.

CONCLUSION

Malignant mixed germ cell tumour of ovary is highly aggressive tumour. These are extremely radio sensitive. Early intervention such as fertility sparing surgery and chemotherapy is highly essential for adolescent girl and young women suffering from this tumour.

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