



Case Report

Histomorphological Spectrum of Malignant Germ Cell Tumours: An Overview and Report of 5 cases

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ABSTRACT:

Ovarian germ cell tumours comprise approximately 15% to 20% of all ovarian neoplasms. They are rapidly growing neoplasms that arise from primordial germ cells derived from the embryonal gonad. Malignant germ cell tumours comprise less than 5% of all ovarian neoplasms. Dysgerminomas are the most common type of malignant primitive germ cell tumours, accounting for 5-10% of ovarian cancers in patients in the first two decades.

KEY WORDS: Ovarian, Neoplasms

INTRODUCTION

Malignant germ cell tumours comprise less than 5% of all ovarian neoplasms [1]. There are 2 major histological groups: dysgerminomas (equivalent to testicular seminomas) and nondysgerminomatous tumours (of which yolk sac tumour is the commonest).

Pure dysgerminoma and yolk sac tumours constitute 50% and 20% of all malignant germ cell tumours, respectively. The remaining, less common, entities include embryonal carcinoma, immature teratoma, choriocarcinoma, polyembryomas, and mixed germ cell tumours [2].

CASE REPORTS:

Table 1: showing patients age, clinical features and size of tumours

Case No	Type of tumour	Age	Symptoms	Tumour Size
1	Dysgerminoma	38yrs	Pain abdomen, mass per abdomen	17x12x6 cm
2	Yolk Sac Tumour (YST)	25yrs	Pain abdomen, mass per abdomen	24x15x12 cm
3	Yolk Sac Tumour (YST)	20yrs	Pain abdomen	18x17x8.5 cm
4	Choriocarcinoma	35yrs	Mass per abdomen	14x10x8 cm
5	Mixed germ cell tumor	22yrs	Pain abdomen, mass per abdomen, altered bowel & bladder habits	11x9x7 cm

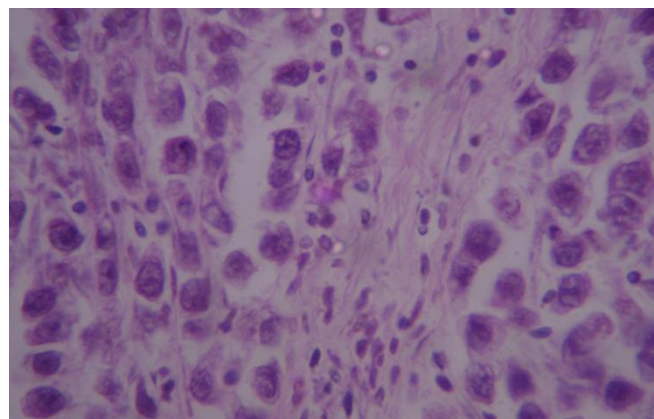
CASE 1 (Dysgerminoma)

Grossly the tumor was grey white with nodular external surface and intact capsule, Cut section was grey white lobulated [Fig1]. Microscopy showed tumour cells arranged in sheet, cords and in nests separated by fibrous septa infiltrated by lymphocytes [Fig2]. Tumour cells were polyhedral in shape with abundant eosinophilic granular to clear cytoplasm and centrally placed vesicular nuclei with prominent nucleoli. Tumour cells showed increased abnormal mitosis. Foci of necrosis and hemorrhage were also appreciated. Histopathologically diagnosed as dysgerminoma.

Fig1:Dysgerminoma-Cut section -grey white lobulated



Fig 2: Dysgerminoma-Tumour cells arranged in sheet, cords and in nests separated by fibrous septa infiltrated by lymphocytes



CASE 2 & 3 - Yolk sac tumours (YST):

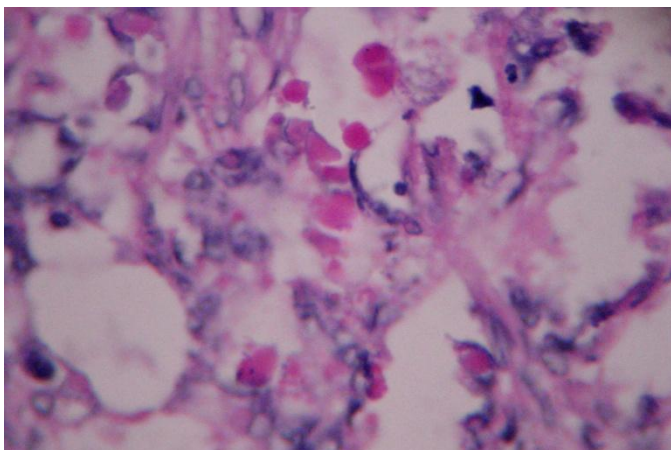
There were 2 patients with YST in our series. The tumours were unilateral, one was solid with gross friable areas of necrosis and haemorrhage, the other case was partly solid and partly cystic with areas of honeycomb like appearance [Fig3]. Microscopically, both the cases showed anastomosing tubules and cystic spaces forming reticular pattern lined by pleomorphic cuboidal tumour cells. Schiller-Duval bodies representing perivascular location of neoplastic cells and loose

vacuolated network of embryonal cells were seen in both cases. Intracellular and extracellular hyaline globules [Fig 4] with positive PAS reaction were also found. Areas of hemorrhage and necrosis were present.

Fig 3: YST-Partly solid and partly cystic areas with honeycomb like appearance



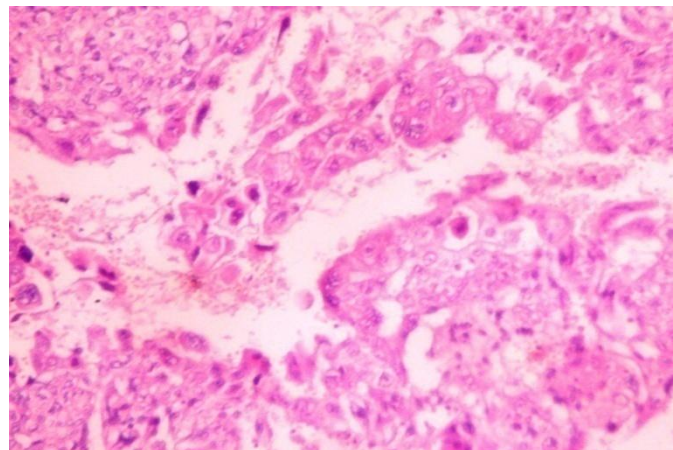
Fig 4: YST- Intracellular and extracellular hyaline globules



CASE 4 (Choriocarcinoma) :

Tumor was unilateral, solid with areas of hemorrhage and necrosis. Microscopy showed tumour cells arranged in sheets, they were large polygonal with eosinophilic to clear cytoplasm and bizarre hyperchromatic, atypical nuclei [Fig5]. Many syncytiotrophoblastic giant cells were seen. Tumor showed extensive hemorrhage and areas of necrosis.

Fig 5: Chorio carcinoma- Syncytiotrophoblastic and cytotrophoblastic elements having eosinophilic to clear cytoplasm and bizarre hyperchromatic, atypical nuclei.



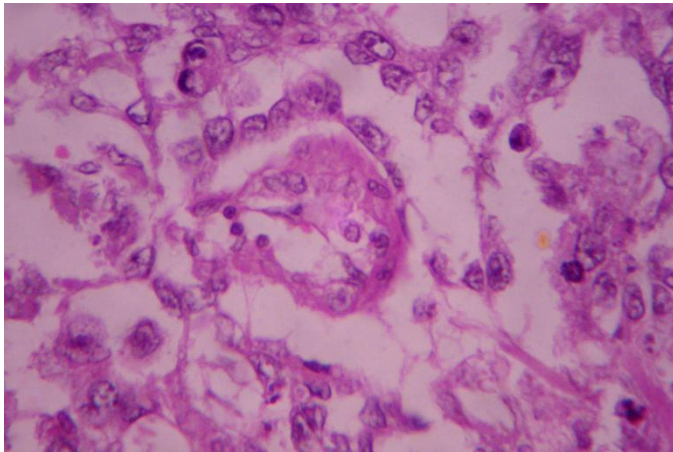
CASE 5 (Mixed germ cell tumour):

A 22 years old girl came with pain and mass per abdomen. Pelvic ultrasonography showed right tubo-ovarian mass with minimal ascites. External surface of the tumor was nodular and cut section was solid grey white with central area of necrosis [Fig6]. Histologically tumour was composed of dysgerminoma component (60%) and YST component (40%) with typical schiller-Duval bodies [Fig 7]. Areas of necrosis were seen. Tumour also showed metastatic deposits in omentum which was sent separately.

Fig 6: Mixed germ cell tumor-Cut section was solid grey white with central area of necrosis



Fig7: Mixed germ cell tumor; Yolk sac component with Schiller-Duval body



DISCUSSION:

Ovarian germ cell neoplasms are thought to be derived from primitive germ cells of the embryonic gonad. They constitute the second largest group accounting for 15 to 20 percent of all ovarian neoplasms. Malignant germ cell tumours comprise less than 5 percent of all ovarian neoplasms [3]. Over 95% of the germ cell tumors are dermoid cysts (Mature cystic teratomas) and more of the remaining germ cell tumors are malignant. In patients under the age of 21 years, approximately 60% of ovarian tumors are of germ cell type, and as many as the third of germ cell tumors are malignant, accounting for two thirds of ovarian cancers in the first two decades [4]

The most frequently encountered subtype is dysgerminoma, which is derived from germinomatous elements. The majority of non dysgerminomatous tumors, which are differentiated from embryonal cells, consist of yolk sac tumors (YST), immature teratoma, and mixed germ cell tumors. Embryonal carcinoma, choriocarcinoma, and polyembryoma types account for only 5%–10% of patients, and rarely exist in pure form.[5,6]. Dysgerminomas account for 5 to 10 percent of ovarian cancers in patients

in the first two decades, and for 20 to 30 percent of ovarian cancers encountered during pregnancy. Rare dysgerminomas arise in phenotypic females with gonadal dysgenesis, and in most such cases, they arise from gonadoblastomas. Most of the patients present with signs or symptoms related to an abdominal mass. Elevated serum level of chorionic gonadotropin (hCG) occur in approximately 3 percent of patients with dysgerminomas, and usually result in hormonal manifestations, which are typically estrogenic, but occasionally androgenic. Dysgerminomas are typically solid, with a median diameter of 15cms. [4].

Yolk sac tumor, so called endodermal sinus tumor, is highly malignant germ cell tumor, it accounts for about 10% of malignant germ cell tumors. The tumor usually presents as a rapidly growing mass in young women [7]. Yolk sac tumors are almost as common as dysgerminoma in the first two decades. Almost all the patients have an elevated serum level of AFP preoperatively [4]. The more characteristic feature of YST is the presence of isolated papillary projections with a central blood vessel and peripheral sleeve of embryonic epithelial cells (Schiller – Duval bodies) [8]

Pure nongestational choriocarcinoma of the ovary is an exceedingly rare and highly malignant tumor that develops before puberty. More frequently choriocarcinoma is seen as a component of a mixed germ cell tumour (MGCT). Clinically, these patients present with abdominal enlargement and pain and, occasionally, there is hemoperitoneum simulating a tubal pregnancy, the pregnancy test is positive and the elevated serum level of hCG may lead to isosexual pseudoprecocity in children or menstrual abnormalities in older patients. Choriocarcinomas are hemorrhagic and friable tumors [8]. Mixed germ cell tumour of the ovary is rare. However, a combination of endodermal sinus and dysgerminoma accounts for one-third of reported cases.[9]

Mixed germ cell tumors are composed of at best two different germ cell elements of which at least one is primitive. Additional neoplastic germ cell elements, including immature or mature teratoma, embryonal carcinoma, polyembryoma and/or choriocarcinoma, may also be present. All components of a mixed germ cell tumors and their approximate proportions should be mentioned in the diagnosis [10]. Most malignant germ cell tumors occur in pure form, but in 10% of the cases two or more types are combined within the same specimen. It is essential, therefore, to examine carefully and sample judiciously each germ cell cancer [4]. Treatment of malignant germ cell tumour of the ovary consists of salpingo-oophorectomy with adjunctive chemotherapy. Chemotherapeutic regimens have evolved to combination therapy with overall disease free survival rates of >95% [11].

CONCLUSION

The ovary is very common site of neoplasia in the female genital tract. The malignant germ cell tumor of ovary manifest a wide spectrum of clinical, morphological and histological features. The study of macroscopic and microscopic features of different primary ovarian tumours will enable for categorization into exact morphological type which will help the gynecologist for proper management. Histopathological study is still the gold standard in diagnosing most of the primary ovarian tumours.

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