

Case Report

Rare Combinations of Testicular Mixed Germ Cell Tumors - 2 Case Reports

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ABSTRACT

Testicular neoplasms of germ cell origin are the most common malignant tumors occurring in the 15-34 years age group. Tumors containing two or more germ cell components are termed as “mixed germ cell tumors” and they constitute 32%-60% of all the germ cell tumors. We report two cases of mixed germ cell tumor of testis, one is combination of seminoma, immature teratoma, chorio carcinoma & yolk sac components occurring in a young male of age 24 years and another is rare combinations of seminoma, chorio carcinoma & yolk sac tumor in 34years male.

Key Words: Testicular tumor, mixed germ cell, Seminoma, non seminomatous germ cell tumors.

INTRODUCTION

Germ cell tumors constitute of 90-95% of testicular tumors where as 20% of ovarian tumors are germ cell origin. ⁽¹⁾ Testicular neoplasms are heterogenous group of tumors showing histopathological diversity. They are classified into seminomatous and non seminomatous germ cell tumors. Generally mixed germ cell tumors contain different combinations. ⁽²⁾ The most common combination is that of teratoma, choriocarcinoma, yolk sac tumor, embryonal carcinoma which constitutes 14% of testicular germ cell tumors. But presence of seminomatous and non seminomatous components in germ cell tumor is unusual presentation. ⁽³⁾ We report two cases unusual combinations of mixed germ cell tumors one consisting of seminoma with immature teratoma, yolk sac tumors and choriocarcinoma in 24 years old male and the other one is seminoma with yolk sac tumor and choriocarcinoma in a 36 years male patient.

CASE REPORT

The First case was 24 years old male patient presented to urology department with Right testicular swelling since 3 years gradually increasing in size with maximum growth during last 4 month. Ultrasonography of scrotum revealed mixed echogenic lesion consisting of solid and cystic components with internal septation in right testis. Left testis was normal. Hematological investigations, Alpha Feto protein, Human chorionic gonadotropin and LDH were normal. Abdomen was soft without tenderness. Right testis was enlarged nodular and left testis was normal. The patient underwent right Orchidectomy and specimen was sent to department of pathology for histopathological examination. We receive partially cut opened testis with attached cord. Testis was measuring 9x7cm. External surface was smooth and nodular, entire cut surface showed grey white areas and multiple tiny cystic areas. Normal testicular parenchyma

identified at periphery measuring 3x3cm.cord measuring 11cm with unremarkable cut surface.

Microscopic examination showed atrophied seminiferous tubules along with few seminiferous tubules showing normal spermatogenesis. Few foci show lobules of tumor cells separated by fibrous septa having chronic mononuclear inflammatory cell collection (Fig-1). Within the lobules, large round to polygonal cells having pleomorphic vesicular nuclei with increased N:C ratio, and prominent nucleoli were seen. Within the tumor tissue plenty of mitotic figures are noted.

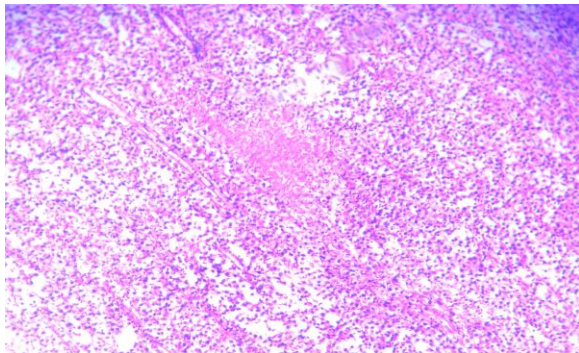


Fig. 1: Microscopic examination (H & E stain) (100X) shows Nests of round tumor cells with clear cytoplasm separated by fibrous septa with lymphocytic infiltration and focal necrosis, consistent seminoma in mixed Germ cell tumor of testis.

Focal areas shows islands of immature cartilage (Fig-3), dilated cystic spaces lined by ciliated pseudo stratified columnar epithelium, mucosa secretory glands, gastric glands and neuroepithelial elements. Occasional foci show Schiller-Duval bodies (Fig-2). Foci of trophoblastic proliferation (Fig-4) and areas of necrosis were noted.

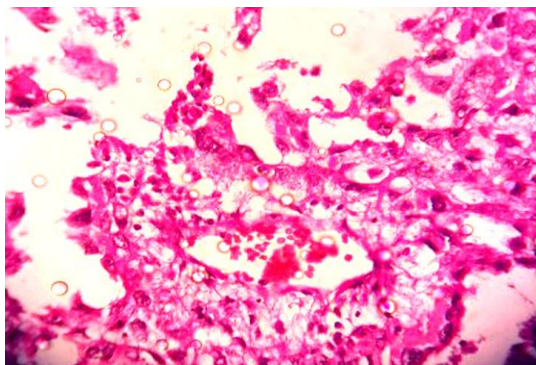


Fig.2: Microscopic examination (H & E stain) (400X) shows Schiller - Duval bodies consistent with Yolk sac tumor in mixed Germ cell tumor of testis.

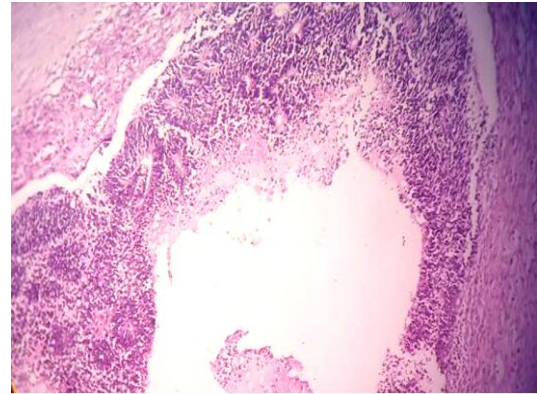


Fig.3: Microscopic examination (H & E stain) (100X) shows immature neuroepithelium consistent with immature teratoma in mixed Germ cell tumor of testis

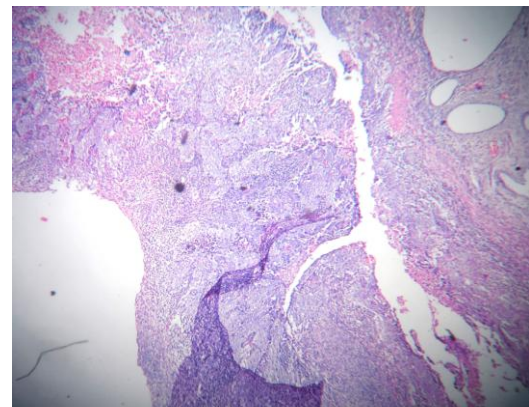


Fig.4: Microscopic examination (H & E stain) (100X) shows sheets of trophoblastic proliferation consistent with choriocarcinoma in mixed germ cell tumor of testis

The other case was 36 years old male patient presented to urology department with left testicular swelling since 5 years gradually increasing in size with maximum growth during last 2 month. Ultrasonography and CT scan revealed mass in retroperitoneum. On physical examination abdomen was soft without tenderness. Left testicular swelling of size 6x5 cm hard and pain less was present. Right testis appears to normal. Hematological investigations, urine examination, liver function tests were normal. Human chorionic gonadotropin, Alpha-fetoprotein levels and LDH levels were normal. The mass was removed and specimen was sent to department of pathology for histopathological examination. Grossly we received left orchidectomy specimen along with cord. Testis was measuring 11x7x5cm. Cut surface shows multiple grey to yellow

necrotic areas each measuring 3x2cm and homogenous grey white area noted measuring 5x4cm. Normal testis was not identified.

Microscopic examination shows testicular parenchyma replaced by tumor tissue. Tumor tissue shows lobular pattern of tumor tissue separated by fibrous septa having lymphocytic infiltration, tumor cells within lobules shows monotonous population of germ cells having pleomorphic nuclei, powdery chromatin, increased N:C ratio prominent nucleoli and moderate amount cytoplasm. Extensive areas of necrosis (Fig-1) and hemorrhages were noted. Focal areas show Schiller-Duval bodies (Fig-2) and pink hyaline bodies. At places syncytiotrophoblastic proliferation (Fig-4) was present. These were a rare type of mixed germ cell tumors with unusual combinations of seminoma, yolk sac tumor choriocarcinoma and immature teratoma.

DISCUSSION

Majority of neoplasms of testis are malignant and they are one of the commonest forms of malignancy in young adult males. (4) Different advances developed in oncology, diagnostic testing and treatment of testicular cancers still remains a challenge especially in developing countries. Mixed germ cell tumors are uncommon before puberty in children. Generally patients present with painless or painful testicular swelling with metastatic signs including abdominal mass or gastrointestinal tract disturbances or pulmonary discomfort. This delay in diagnosis is usually due to insidious onset and lack of overt signs. (4)

The most well documented risk factor for development of germ cell tumors is cryptorchidism. The most consistent chromosomal abnormality is chromosome of the short arm of chromosome 12, which is present in 83% of non seminomatous tumors and 56% of seminomatous tumors. (5) The pathogenesis of mixed germ cell tumors includes chromosomal aberrations in the

form of isochromosome formation and deletion of chromosome. The pluripotency of homeobox genes NANOG is expressed in human germ cell tumors. WHO classification divided germ cell tumors into two categories. About 40% of the tumors are composed of a single histologic pattern such as seminoma, embryonal carcinoma, yolk sac tumor, choriocarcinoma and teratoma. The remaining 60% contain a mixture of two or more histologic pattern.

In young adult male about 99% of testicular neoplasms are malignant and used to be one of the commonest causes of mortality in them. Pure teratomas represent only about 4% of testicular germ cell tumors. (6,7) Most teratoma elements in the testis occur as a component of mixed germ cell tumors. Teratomas represent about 50% of the mixed germ cell tumors. (6,7) Teratomas are divided into mature and immature subtypes based on histological components. Teratoma occurs in children and young adults. In young adults rare pure teratoma accounts for 2.7% to 7% of germ cell tumors. They are commonly found mixed with other germ cell tumors. Grossly it is a well circumscribed nodular firm mass with a heterogeneous cut surface showing solid cystic areas, hair, cartilage and bone. Microscopically mature teratoma shows skin, cartilage, muscle, respiratory, intestinal epithelium and nervous system. Immature teratoma shows neuroepithelium, embryonic tubules and immature cartilage.

Seminomas are most common histologic type of testicular germ cell tumor. It represents approximately 50% of germ cell tumors and tends to occur in the fourth decade. Grossly they are circumscribed gray white to tan with bulging cut surface. Necrosis and hemorrhage are uncommon. Microscopically the lesion shows diffuse sheets of tumor cells separated by fibrous septa. Tumor cells are uniform with distinct cell borders and clear to eosinophilic cytoplasm. Lymphocytic collection is seen in the fibrous septa.

Choriocarcinoma is a malignant germ cell tumor composed of

syncytiotrophoblast, cytotrophoblast and intermediate trophoblast cells. Choriocarcinomas are highly malignant and carry a poor prognosis. Grossly shows these are small, red brown, friable lesions with extensive hemorrhage and necrosis. Microscopically it contains both multinucleated syncytiotrophoblasts and cytotrophoblasts. Syncytiotrophoblast cells are large multinucleated cells with large irregular nuclei and cytotrophoblast cells having clear cytoplasm with single nuclei. Background shows hemorrhage and necrosis.

Yolk sac tumor is a common component of mixed germ cell tumors of the testis, accounting for about 1% of testicular germ cell tumors. Pure yolk sac tumors of the testis are rare in adults but the most common of the testicular germ cell tumor in child. ⁽⁸⁾ Pure yolk sac tumor occurs in prepubertal children. It usually presents as a component of mixed GCT in post pubertal children and adults and present in 40% of non seminomatous GCTS. Grossly it shows well demarcated, soft, grey to white tumor with gelatinous solid and cystic areas on cut section. Hemorrhage and necrosis also noted on cut section. Microscopically lesion shows tumor cells arranged in microcystic or reticular pattern solid sheets and papillary pattern. Tumor cells are polygonal with clear to eosinophilic cytoplasm with distinct cell borders and prominent nuclei. Focal areas show thin walled blood vessels surrounded by a layer of tumor cells.

The prognosis and therapy of these testicular tumors depend on clinical stage and histopathological type. ⁽⁹⁾ 70% of the tumors can be cured with appropriate therapy. ⁽⁴⁾ The purpose of reporting these two cases is the rarity of these types of mixed Germ cell tumors. These cases highlight the rare combination in a mixed germ cell tumor diagnosed histologically. Biological markers including AFP, HCG, and LDH are valuable in follow up the patients. Over half of germ cell tumors consists of more than one cell type, requiring appropriate sampling for correct

diagnosis and correlate with serum tumor markers and immune histochemistry. Review of the literature ⁽¹⁰⁾ shows different combinations of mixed germ cell tumors and we report 2 cases of mixed germ cell tumors with rare combination of germ cell tumor components in our institute.

CONCLUSION

Gonadal mixed germ cell tumors poses diagnostically challenging issues for the pathologist. These should be diagnosed accurately with germ cell components as its biological, clinical, behavior management and prognosis vary with its different histological elements. We are reporting these cases for creating awareness among the pathologists and emphasis giving extensive sectioning of tissue sample to prevent missing of the germ cell component which can affect the prognosis of patient.

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