Case Report

Mixed germ cell tumor of left testis: A case report from a teaching hospital in Mahabubnagar

Rajaneesh Borugadda[1], K Venkat Ram Reddy[2*], G Ramakrishna Reddy[3], L Vijay Kumar[4], Mandepudi Geethika[5]

[1]Junior Resident, [2]Professor and HOD,[3]Professor, [4]Associate Professor, [5]Assistant professor, Department of Radiodiagnosis, SVS medical Collegeand Hospital, Mahabubnagar, Telangana, INDIA.
Email: nagababu00799@gmail.com

Abstract

Germ cell tumors in testes are common, but mixed germ cell tumors are rare to occur in the testis. We report one case of mixed germ cell tumors with one component containing seminoma and other component immature teratoma, in the left testes of a 21-year-old male. Many combinations of mixed germ cell tumors have been reported but very few cases of the above-mentioned combinations have been reported in literature.

Key Words: Immature teratoma, mixed germ cell tumors, pluripotent embryonic stem cells, yolk sac tumor.

[*]**Address for Correspondence:**
Dr. K Venkat Ram Reddy, Professor and HOD, Department of Radiodiagnosis, SVS medical College and Hospital, Mahabubnagar, Telangana, INDIA.
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INTRODUCTION

Testicular cancer is a relatively rare neoplasm. Occurring in men of three age group infancy, adolescence and early adulthood, but developing most commonly in men between 20 to 40 years of age.[1] According to the Coleman MP *et al*., testis tumours are the third leading cause of death. Pathologically, testicular cancers are classified in to two groups; germ cell tumors which are derived from germinal epithelium and non-germinal tumors which are of gonadal stroma origin. Among them 95% are of are germ cell origin. Mixed germ cell tumors are generally rare with various combinations. Testicular mixed germ cell tumor combinations usually consist of yolk sac tumor with embryonal carcinoma, mature teratoma and choriocarcinoma, but combinations of seminoma with immature teratoma are rare [2].

CASE PRESENTATION

A 21-year-old male came with complaints of scrotal swelling, dull scrotal pain and acute low-grade intermittent fever for 3 months. On local examination left scrotum was increased in size with round and firm testis. The remainder examination was normal. Laboratory investigations revealed normal hematocrit levels. RBC, WBC count, serum electrolytes were normal. Lactate dehydrogenase (LDH) was 176 IU/L (100-190 IU/L), elevated alpha fetoprotein (AFP) 2.36 ng/ml (0.0 – 0.9ng/ml) and normal Beta HCG 2.39 IU/L (< 5 m IU/L). Chest radiograph was normal. On ultrasound a well defined, heterogeneous complex mass with cystic and solid components in left testis. On colour flow mapping there was increased vascularity relative to normal testicle. Epididymis and spermatic cord appears normal.

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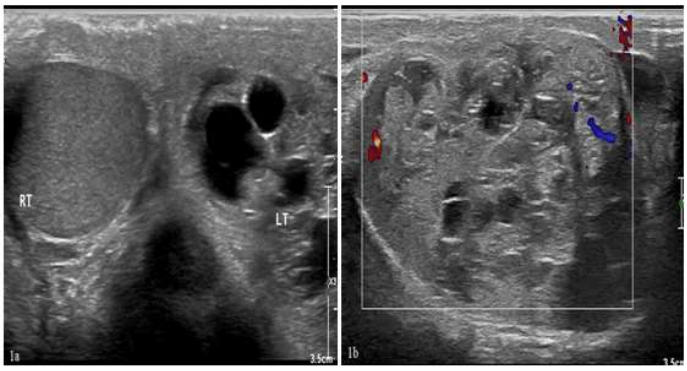

Figure1: a) showing both right and left testis axial sections **b)** axial section left testis with colour mapping showing minimal vascularity.

On plain CT a well defined, heterogeneously hypodense lesion in left testis with solid and cystic components noted approximately measuring 3.8 x 3.4x 3.1 cms. On contrast enhanced CT, there was moderate enhancement of the solid component noted. There was no retroperitoneal / para-aortic lymphadenopathy. Other parts of pelvis and abdomen are unremarkable.

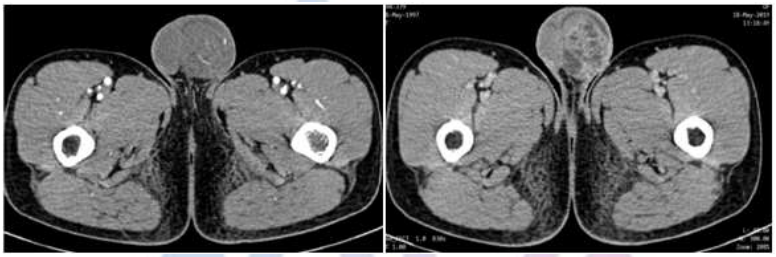

Figure 2 a): CECT axial section at level of testis arterial phase showing heterogenous enhancement. **b):** CECT axial section at level of testis venous phase showing heterogenous mild enhancement with non enhancing cystic spaces

On MRI a well defined T1 heterogenously hypo intense, T2 hyper intense lesion with multiple cystic spaces and STIR (short tau inversion recovery) heterogeneously hyperintense lesion noted in left testis. . Enhancement could not be evaluated as contrast was not done.

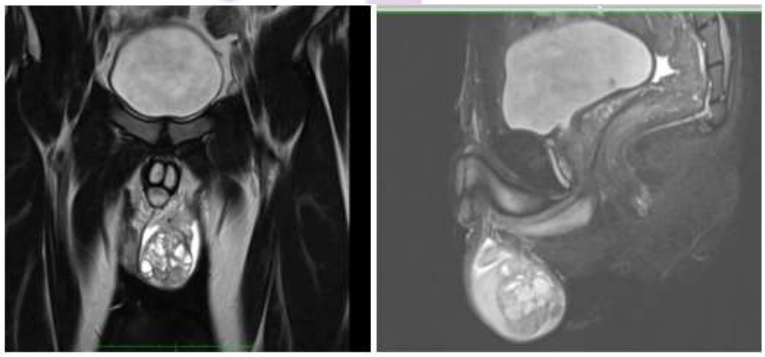

Figure 3 a): coronal T2 hyper intense lesion with multiple cystic spaces. **b):** Sagittal STIR heterogeneously hyperintense lesion

Provisional Diagnosis:

A provisional diagnosis of testicular tumour was given.

Differential Diagnosis:

There will be an overlap of imaging features between testicular tumours and non tumorous conditions like focal infarction, infection and hematoma which appear as masses with variable internal blood flow [3].

DISCUSSION

Testicular tumours are about 1% of all malignant tumours. Their incidence in adolescents and children has been reported to be 0.5- 2.0 per 100000 [4]. 95% of testicular cancers are seminomatous(50%) or nonseminomatous(50%) germ cell tumours of this only 5% are sex cord-stromal tumors. Seminomatous tumours occur in men between the ages of 35 and 45 years, while non seminomatous tumours occur in men between 15 to 35 years old.[5] In children most common testicular tumour is yolk sac carcinoma. The risk factors for testicular tumours include undescended testis, prenatal exposure to elevated estradiol levels, orchitis, exposure to chemical carcinogens, gonadal dysgenesis and trauma. Clinical presentations of these tumours are painless swelling and hard testis. Acute scrotal pain is seen in 10% of patients. Leydig cell tumours and sertoli cell tumours produce androgens or oestrogens which may cause gynaecomastia or loss of libido in men. Tumor markers of testicular tumours include Beta HCG, alpha fetoprotein and lactate dehydrogenase. Ultrasound imaging with physical examination has sensitivity of 100%. These tumors are typically hypo-echoic compared to the normal testicular tissue with internal calcifications, cystic changes and increased vascularity within the lesions. However increased vascularity is not specific to testicular tumours [6]. Some cases may show testicular microlithiasis. CT remains the standard modality of imaging in evaluating the patterns of tumour spread, characteristic appearances of metastatic disease, and retroperitoneal lymphadenopathy.[7] Most bulky seminomatous masses are of soft tissue density and contain occasionally low density areas of central necrosis. Large masses of non seminomatous germ cell tumours are heterogenous with haemorrhagic areas and cystic necrotic areas. A retroperitoneal lymph node greater than 10 mm (maximum transverse diameter) is definitely metastatic. Involvement of inguinal and iliac nodes is uncommon and is associated with congenital anomalies. Thoracic CT is most sensitive in detecting pulmonary metastasis. MRI is usually helpful in differentiation of non seminomatous from seminomatous testicular tumours. On MRI seminomas present as multinodular tumors with uniform hypointensity on T2WI. On contrast study fibrovascular septae shows enhancement more than that of tumour tissue. Non seminomatous germ cell tumours include four basic types embryonal carcinoma, choriocarcinoma, yolk sac tumour and teratoma. Combination of two or more types results in mixed germ cell tumours. Embryonal cell carcinoma is solid tumour with foci of hemorrhage and necrosis. Teratoma is predominantly cystic and multi loculated, cartilage foci are present with in tumour. Choriocarcinoma are small hemorrhagic and partly necrotic. Yolk sac tumour is microcystic in appearance. So on MRI non seminomatous germ cell tumours appears as heterogenous masses with areas of necrosis and haemorrhage and variable enhancement on gadolinium administration.[8,9] Positron emission tomography is usually not undertaken as routine investigation for staging. It identifies the disease which is not detected on CT. Therefore used in defining the site of relapse in patients with elevated tumor markers, but with normal CT examination.[6] Novel imaging techniques like lymphotrophic Nanoparticle enhanced MRI was found to be more sensitive and specific than abdominal CT in identifying positive lymph nodes.[6]

MANAGEMENT

All patients with testicular tumours undergo radical inguinal orchidectomy. Seminomatous germ cell tumours and seminomatous extra gonadal germ cell tumours are sensitive to chemotherapy. Non seminomatous germ cell tumours are frequently chemo resistant.[10]

CONCLUSION

Left sided high inguinal orchidectomy was done and sent for histopathological examination which revealed Mixed germ cell tumour with components of embroyonal carcinoma(10%), yolk sac tumour, post pubertal type (20%) and teratoma (70%) .More than 50% of germ cell tumours include more than 2 basic germ cell tumour types, with the exception of spermatocytic seminoma. Most patients with successful treatment has survival rates of >90%, which depends on accurate assessment of disease at all stages. Radiological imaging plays a key role in diagnosis, determining the tumour extent and sites of metastasis.

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