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Spermatocytic Tumour - A Case Report of a Rare Testicular Cancer

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Abstract: ***A spermatocytic tumour was previously known as spermatocytic seminoma, but now it is considered a distinct entity from Germ cell tumors. It is rare and accounts for less than 1% of testicular tumors. The peak incidence of spermatocytic tumors is sixth decade. It follows a benign course, and only a few cases of metastasis are being reported. It is almost always cured by orchiectomy. Considering the rarity of the disease and the absence of large prospective studies, no guideline is available to suggest whether adjuvant therapy should be given. Only a few authors suggest giving adjuvant Radiotherapy or Chemotherapy in patients with poor histologic elements like sarcomatous or anaplastic types. The present study describes the case of a 49 - year - old male, who visited the authors' clinic when he noticed a painless mass in the right testis. On examination, there was a small hard mass palpable in the right testis, left testis was normal. Serum tumor markers were not raised. Imaging showed a complex mass in the right testis of size 3x3x4 cm with no enlarged lymph nodes. A right - side radical orchiectomy was done under spinal anesthesia. Histopathological examination and Immunohistochemistry showed a spermatocytic tumor. No metastasis on CT was detected in the post - operative period and a follow - up period of one year. This case report highlights the rare testicular tumor. Early diagnosis and proper treatment are crucial for a good prognosis.***

Keywords: spermatocytic tumor, Testicular cancer, Spermatocytic seminoma, Orchidectomy.

1. Introduction

Testicular cancer contributes to approx.1.5% of all cancers in the male population. [1] Testicular cancers are classified into germ - cell tumors (GCT, > 95%) and non - germ - cell tumors. Spermatocytic tumor (ST) is a rare form of GCT, comprising less than 1% of all cases. The peak incidence of ST is the sixth decade. It is a slow - growing tumor and does not spread to other parts of the body. It was previously classified as a type of seminoma, now considered a distinct entity due to several important differences. [2] The characteristics that differentiate STs from classical seminoma include presentation at an elderly age, a lack of an undescended testicle, and a diminished inclination for metastasis. [3] Seminoma and other GCTs are derived from primordial germ cells/gonocytes, whereas ST derives from more mature germ cells (like premeiotic germ cells). [Figure 1] ST, unlike seminoma, does not exhibit gains of the short arm of chromosome 12. ST shows a unique amplification of chromosome 9, corresponding to the DMRT1 gene, not reported in all GCNIS - related tumors. [4, 5]

Macroscopically ST have well - defined borders, glistening grey - white on the cut surface, mucoid material may or may not be present and areas of necrosis are rarely detected.; very infrequently, they present with trabecular, nest, cystic, or pseudo - glandular patterns.

Unlike GCTs, there are no elements of germ cell neoplasia in situ (GCNIS), no significant inflammatory infiltrate, Granulomas, fibrovascular septa or cytoplasmic glycogen can be observed; these features may be helpful in differential diagnosis with classic seminoma.

The differential diagnosis of ST should be made with seminoma, embryonal carcinoma, and malignant lymphoma. [6, 7, 8]

As with ST, seminoma is CD117/ckit+; however, typical seminoma is reactive with GCT markers, like OCT3/4 and PLAP. Embryonal carcinoma has pleomorphic tumor cells, and a variety of architectural patterns (like glandular, cystic, and papillary) are hardly observed in ST. The typical staining for CD30/BerH2 and OCT3/4 allows the diagnosis of embryonal carcinoma. High grade non - Hodgkin lymphomas also need to be differentiated from ST in elderly patients. St does not show positivity for lymphoid markers, like CD45, CD20, and CD3. STs are negative for many GCT markers, like OCT3/4, PLAP, alfa - fetoprotein, glypican - 3, hCG, CD30/BerH2, whilst they are positive for CD117/ckit and SALL4 and range of antigens expressed in spermatogonia and early spermatocytes (like MAGE - A4, OCT2, SAGE1, XPA, FGFR3, HRAS).

Sarcomatous transformation of ST is rare. The sarcomatous components is mostly undifferentiated spindle cell sarcoma. Rhabdomyosarcoma and chondroid differentiation is very rarely seen. Some authors have suggested that the emergence of sarcoma in ST can be due to an anaplastic transformation or dedifferentiation of well - differentiated ST. [9] Due to the aggressive nature of the disease, with a high risk of metastatic spread, the detection of such components in the final specimen is very important and may require adjuvant treatment after surgery. [10]

STs usually present as unilateral testicular mass, bilateral involvement has also been reported. [11] The association with cryptorchidism is very rare. Serum tumor markers, Beta - HCG, alpha - fetoprotein (AFP, Lactate dehydrogenase (LDH), are within normal limits in ST patients they are reported to be increased in 1% of cases. [12]

STs never arise in extra gonadal sites such as the mediastinum, retro - peritoneum, and sacrococcygeal area.

The optimal management of individuals with ST has not yet been established due to their shallow occurrence. Some

experts suggest Radical Orchiectomy (High Inguinal orchiectomy), whereas some suggest testis - sparing removal of the tumor may provide adequate treatment. [2, 9]

Surgery alone is the standard of care as STs metastasize rarely. Adjuvant Radiotherapy (adj. RT) was performed in the past, but it has gone into dispute in recent studies. [9] And post - orchiectomy surveillance remains an avenue for improving patient care for men with ST.

STs with sarcomatous transformation are very aggressive and resistant to cytotoxic chemotherapy. Patients with these subtypes have a very poor prognosis with a median survival of around 5 months. [12]

The guideline of treatment for STs with sarcomatous transformation has yet to be established.

2. Case Report

Patient information: A 49 - year - old patient presented to the urology department of a super - specialty hospital in eastern India when he noticed a painless hard lump in his right testis for 6months. The case had no history of testicular trauma.

Clinical examination: A non - tender hard lump was found in the right testis of the patient. The left testis was normal in size and consistency. Inguinal lymph nodes were not palpable.

Investigations: The levels of serum tumour markers, including alpha - fetoprotein (AFP; 1.2 ng/ml; normal range - 0 - 40ng/ml), human chorionic gonadotropin (hCG; 0.01 - mIU/ml, normal range - <3mIU/Ml) and lactate dehydrogenase (LDH; 214U/l; normal range - 135 - 225U/l) were within normal range. Scrotal ultrasound (USG) showed a complex mass measuring 3x3x4 cm in the right testis, while the left testis appeared normal. No para - aortic lymph nodes were seen in abdominal USG.

Treatment: under spinal anaesthesia, a Right radical orchiectomy was performed.

Histopathological examination showed a tumor having a nodular growth pattern separated by fibrous septa without lymphocytic infiltration. There are small cells with dark nuclei and intermediate cells with round nuclei with filamentous chromatin and dense eosinophilic cytoplasm. Scattered giant cells are also seen, but no elements of GCIN were found. The tumor has not invaded the tunica vaginalis, rete testis, or epididymis. The spermatic cord was free. These findings were compatible with a spermatocytic tumor of the right testis. For confirmation, Immunohistochemical analysis (IHC) was done, which showed that the lesional cells were positive for **CD117** and **SALL4,** and was negative for **OCT3/4, CK** and **CD30**. So the diagnosis of a spermatocytic tumour of the right testis was confirmed.

Follow - up: The post - operative period was uneventful patient. The metastatic workup was done with Computed tomography scans of the chest, abdomen, and pelvis, which revealed no evidence of metastasis. The patient was discharged on post - operative day two (POD 2). The patient is on follow - up for the last 1 year post - surgery. The CT scan of the abdomen, chest, and pelvis of the patient was done in 6 monthly intervals. There was no evidence of any recurrence or metastasis.

3. Conclusion

The present case report of ST emphasizes the significance of early detection and prompt treatment of this rare and slowly growing tumor. Any painless mass in the testis should not be ignored. Clinical examination, tumour markers, and imaging techniques are crucial for proper diagnosis. Radical orchiectomy is the standard of care. Histopathological examination immunohistochemistry plays a vital role in the identification of the exact tumor type, which is necessary for further management of testicular tumors. Long - term follow - up is important to detect any recurrence or metastasis.

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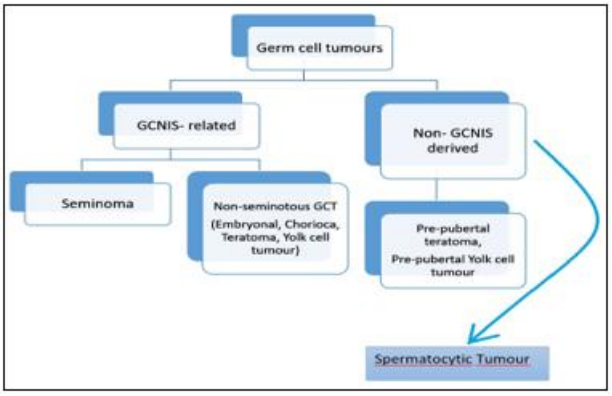

Figure 1: Shows origin of different germ cell tumours and spermatocytic tumours

Images

Image1: Shows 10x magnification of H & E stained slide (A) of tumour composed of three types of cells - small, intermediate, and occasional giant cells. Unlike classical seminoma, the tumour lacks stromal and inflammatory cells.40x magnification of H & E stained section (B) shows small lymphocyte - like cells (white arrow) and intermediate cells (Black arrow).

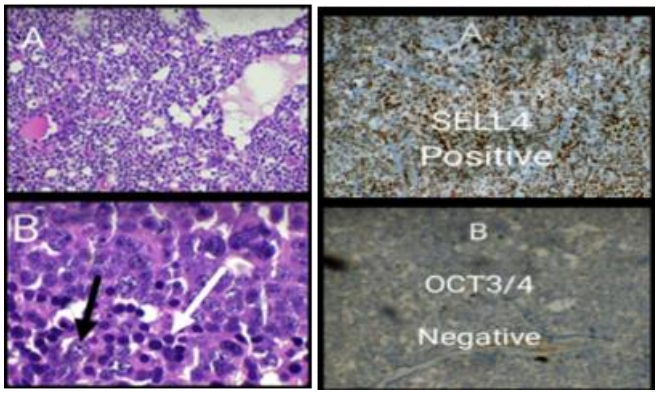

Image 2: Immunohistochemistry of tissue slides showing positivity for SELL4 (marked as A) and negativity for OCT3/4 (Marked as B).

Conflict of Interest: Nil

Declaration:

In this case report, we have taken proper consent from the patient and his guardians regarding the use of investigations for scientific purposes and publication in scientific medical journals. We have not disclosed the identity of the patient anywhere in the case report.

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