ORIGINAL RESEARCH PAPER

Pathology

KEYWORD: seminoma, Embryonal Carcinoma, Teratoma, Yolk Sac Tumour.

RARE CASES OF MIXED GERM CELL TUMOUR OF TESTIS- A REPORT OF TWO CASES WITH UNCOMMON COMBINATIONS AND REVIEW OF LITERATURE.

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ABSTRACT

Mixed germ cell tumours of testis represent a comparatively rare category of testicular tumour where different types of both seminomatous and non-seminomatous tumours can be present in varied proportions. We report two cases of mixed germ cell tumours, one consisting of seminoma, embryonal carcinoma and post-pubertal teratoma in the testis of a 22-year-old male and second consisting of a yolk sac tumour and immature teratoma in the testis of a 19-year-old male. We report theses case due to the rare combination and for documentation.

INTRODUCTION

Testicular tumours are a heterogenous group of neoplasms presenting with diverse histopathological features, variable clinical course and prognosis [1]. Testicular neoplasms represent 5% of urological cancers. More than 90% of testicular tumours are malignant and originate in the germ cells [2]. The rest of them derived from other cells, including Leydig cells and lymphocytes (lymphoma).

The two main groups of germ cell tumours are- seminomatous and non seminomatous. Non seminomatous germ cell tumours (NSGCTs) include various types of neoplasms like embryonal carcinoma, yolk sac tumour, teratoma, choriocarcinoma, as well as mixed germ cell tumour (MGCT). MGCTs consist of the aforementioned types of tumours in variable proportions[3].

Testicular cancer may be painless, leading to cases being diagnosed at a much advanced stage. Painful testicular swellings should be differentiated from epididymo-orchitis. Considering the recent advancements in treatment, testicular cancers are highly curable. The prognosis depends on the histologic type, stage and extent of the metastasis.

Herein, we report two rare cases of mixed germ cell tumour of the testis.

CASE REPORTS

CASE 1:

A 22-year-old male patient presented with 2 years history of swelling in the left lower abdomen and groin region. The mass was removed. The received specimen of left testis along with the mass and spermatic cord was having an overall dimension of 10 × 12 × 8 cm. Grossly, the external surface was smooth and nodular. Cut surface showed homogenous grey-white solid and nodular areas. At some places variegated appearance were noted. Microscopically, the section from tumour showed compact nests of large and uniform cells with clear cytoplasm, sharp cell membranes and centrally located nuclei. Such nests were separated by fibrous septa having lymphocytic infiltration. Features were suggestive of seminoma. Another area of tumour had foci of glandular, neural and cartilaginous components, suggestive of teratomatous elements. Along with these, section from another part of tumour also consisted of papillary, glandular and nested growth pattern with fibrosis. Cellular pleomorphism and large nuclei and indistinct cell borders were also noted. These features were consistent with embryonal carcinoma. This was a rare type of advanced mixed germ cell tumor consisting of 50% seminomatous component, 45% post pubertal teratoma and 5% embryonal carcinoma component. The tumour involved the rete testis, epididymis, tunica albuginea, base of the spermatic cord and surgical cut margin of the spermatic cord. Lymphovascular emboli was not seen. On further radiological investigation, it was found that the tumour had metastasized to lungs and retroperitoneal lymph nodes. The histologic pictures are illustrated in Figures 1-3.

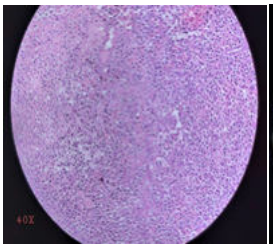

Figure 1: Seminoma

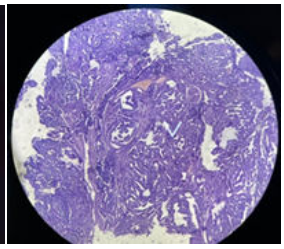

Figure 2: Embryonal cell carcinoma showing papillary pattern

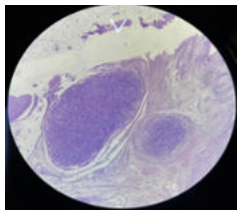

Figure 3: Teratoma showing cartilaginous component

CASE 2:

The other case was that of a 19-year-old, with complain of pain and rapidly increasing swelling in testis for over 6 months. Sonography revealed left testicular mass. Left high orchidectomy was performed and the mass was excised. The excised specimen was received for histopathological examination as a large single piece grossly measuring 14cm × 13cm × 12cm in dimensions. External surface was smooth and multilobated. Cut surface shows predominantly solid homogenous areas with few areas of mucinous texture. There were foci of gritty cartilaginous material as well as areas of haemorrhage and necrosis. Microscopically the mass showed areas of reticular pattern with irregular loose spaces and cytoplasmic vacuoles. Few Schiller-Duval bodies were also found, having a central fibrovascular core and surrounded by malignant cuboidal to columnar cells. These bodies were recessed into cystic spaces that, in turn, were lined by

flattened cells. Such features were suggestive of yolk sac tumour. Along with this, certain areas of the mass showed immature cartilage admixed with neural components, suggesting of a post pubertal teratomatous elements. This was a rare type of mixed germ cell tumour comprising of predominantly yolk sac tumour, along with some components of post pubertal teratoma. The tumour involved the rete testis, epididymis and tunica albuginea. Surgical cut margin of the spermatic cord was uninvolved. Lymphovascular emboli were not seen. The histopathological features are illustrated in Figures 4-6.

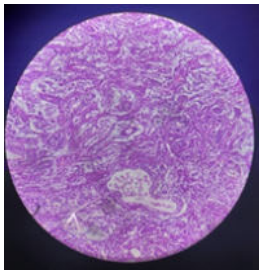

Figure 4: Yolk Sac Tumour With Schiller Duval Bodies

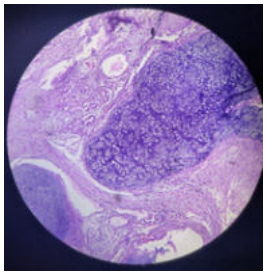

Figure 5: Cartilage in teratoma

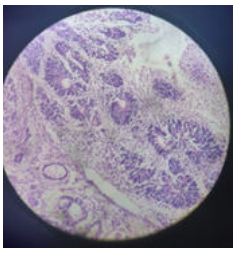

Figure 6: Neural elements in teratoma

DISCUSSION

Germ cell tumours of the testis are the most common solid tumour in men between 15 and 35 years of age. The most characteristic presentation of a testicular germ cell tumour is a painless testicular mass. Several studies have reported specific combinations of different GCT elements in mixed GCT of testis [5,6]. Mostofi[6] in classifying more than 6000 testicular tumours found >1 histological patterns in approximately 60% of cases with the most frequent combination of embryonal carcinoma, yolk sac tumour and choriocarcinoma. Mosharafa et al. concluded 10 possible pair combinations with the strongest correlation between teratoma and yolk sac tumour from their statistical analysis[7]. Lovri described an unusual mixed GCT consisting of yolk sac tumour and teratoma with rhabdomyosarcomatous element[8]. Terrier Lacombe has also described embryonal rhabdomyosarcoma arising in a mature teratoma of testis [9]. Gonzalez-vela JL has reported poor prognosis of germ cell tumours with sarcomatous component[10].

Chromosomal aberrations in the form of isochromosome formation and deletion of chromosome 12 is the basic pathogenesis of germ cell tumours. The pluripotency of homeobox genes NANOG is expressed in human germ cell tumours[22]. OCT3/4 and SOX2 genes are transcription factors expressed in embryonic stem cells. Increased levels of these transcription factors SOX2 and OCT3/4 maintains the pluripotent state of the cells of these mixed germ cell tumours.

CONCLUSION

The purpose of reporting this case was giant size and rarity of the combination of seminoma, prepubertal teratoma and embryonal carcinoma of testis in one case and a rare combination of yolk sac tumour and post pubertal teratoma in the other case. These cases not only reflect the heterogeneity in the pathogenesis of germ cell tumour of the testis but also highlight the aggressiveness of these tumours indicating challenges in treatment.

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