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Case Report

Predominant Polyembryoma component in a testicular mixed germ cell tumor: A Rare entity

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Abstract

Polyembryoma in pure form is a rare entity, more often associated with other germ cell tumor components, commonly observed as a part of malignant mixed germ cell tumor with predominant yolk-sac component. We report a case of a 23 year old male having malignant mixed germ cell tumor of testis in which major component was polyembryoma (>65%) and rest were teratomatous and yolk sac component with an elevated level of serum α-fetoprotein (AFP) and human chorionic gonadotrophin (HCG). He was treated with surgery followed by combination chemotherapy and is doing well till now.

Keywords: Testicular mixed germ cell tumor, Polyembryoma.

1. Introduction

Malignant mixed germ cell tumors (MGCT) are the second most common testicular germ cell tumor following seminoma, affecting usually young men. Varying proportions of different combinations include teratoma and embryonal carcinoma (25%), embryonal carcinoma and seminoma (15%), teratoma, embryonal carcinoma and seminoma (15%) and rarely seminoma and yolk sac tumor.

Polyembryoma in pure form is extremely rare neoplasm, composed exclusively of embryoid bodies in which embryonal carcinoma and yolk-sac component are detected additionally with teratoma. More often it is associated with yolk cell tumor and teratoma, with painless symptomatic enlargement of testis. Serum α-fetoprotein (AFP) may be substantially elevated.

Embryoid bodies resemble the pre-somite embryos of less than 18 days development, consists of an amniotic cavity, an embryonic disc, a yolk sac and myxoid extra-embryonic mesenchyme[1].

Here we report a case of 23 year old male patient presented with painless right testicular enlargement, with markedly raised serum AFP level and minimally raised β-HCG level undergone orchiectomy on the basis of strong suspicion for malignant germ cell tumor and histopathology revealed predominant polyembryoma component about more than 70% admixed with teratomatous and yolk sac component (YST) on multiple section examined from different areas of the tumor provided.

2. Case report

A 23 years old male patient presented in our OPD with complaint of painless swelling of his right scrotum for last one year with rapid increase in last two months.

On examination, right testis was found enlarged and firm in consistency while left testis was normal on palpation with preserved sensation. No lymph node was palpable and was otherwise clinically unremarkable.

Ultrasonography revealed an ill-defined heterogeneous space occupying lesion in right testis with demonstrable internal vascularity in Color Doppler mode [Figure 1]. Considering the age of the patient, germ cell tumor was strongly suspected on the basis of substantial elevation serum AFP level and mild elevation of β-HCG (48 ng/ml and 6.6 mIU/ml respectively).

Considering above findings, right sided radical orchiectomy was performed. Per-operative and post-operative events were unremarkable.

On gross examination, the excised testis measured 12x7x4 cm. Capsule intact, cut surface show a tumor replacing the whole of testis, variegated in appearance, grayish-white, firm, predominantly solid, some cystic areas and myxoid changes of stroma at places [Figure 1]. Histopathological examination of multiple sections examined revealed features of mixed germ cell tumor with predominant component of polyembryoma showing numerous embryoid bodies in a background of myxoid extra-embryonic

mesenchyme (around 65% of the tumor) [Figure 2a and b]. Other components were mature teratoma and yolk sac component with Schiller-Duval bodies [Figure 3]. Epididymis with its resected margin and capsules were uninvolved.

In post-operative period, patient was undergone CT scan of abdomen and chest X-ray and the reports were negative for metastases. On the basis of histopathological findings Cisplatin-based combination chemotherapy was started. The patient is doing well till now.

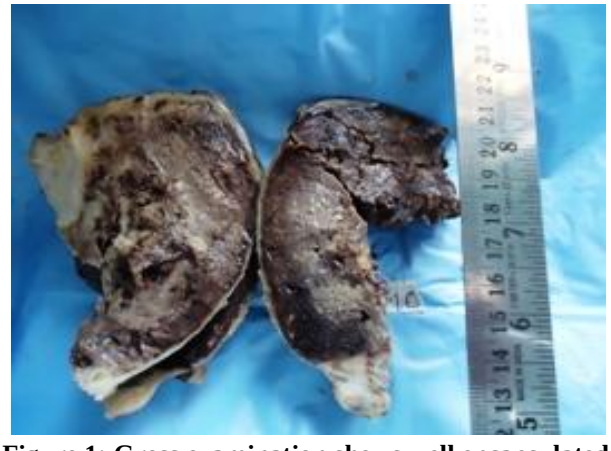

Figure 1: Gross examination shows well encapsulated testis having variegated appearance on cut surface.

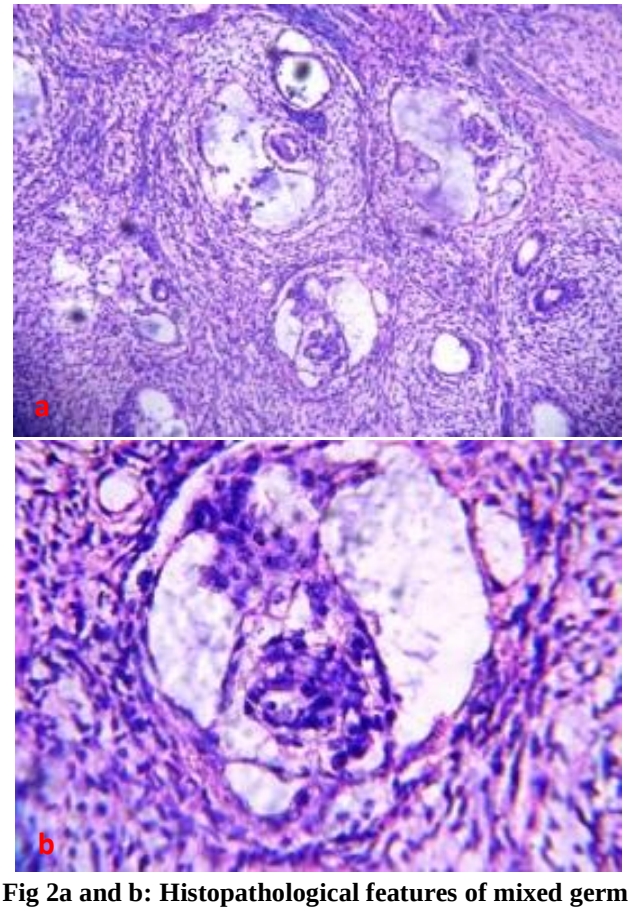

Fig 2a and b: Histopathological features of mixed germ cell tumor with predominant component of polyembryoma showing numerous embryoid bodies in a background of myxoid extra-embryonic mesenchyme (around 65% of the tumor)

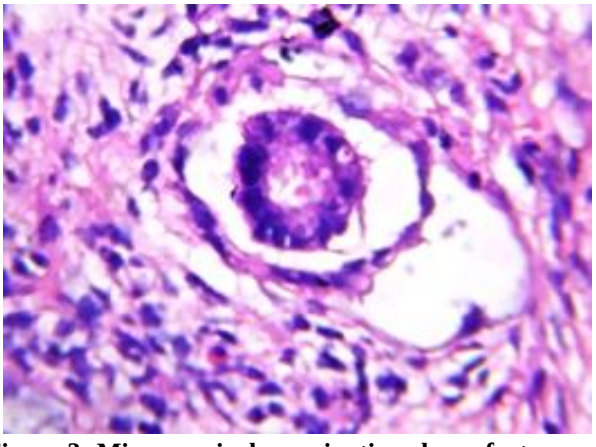

Figure 3: Microscopical examination shows features of Schiller-Duval body

3. Discussion

Germ cell tumors of gonads often produce diagnostic difficulties for the pathologists. Multiple sections from different areas are necessary to document different components.

Polyembryoma is rare component of mixed germ cell tumor seen in both gonads, but more common in testis [2]. It is distinct from all gonadal germ cell tumors showing well organized arrangement of embryonic disc, yolk sac and amniotic cavity. Morphologically it resembles pre-somite embryo [1]. It exhibits the same malignant behavior as other non-seminomatous malignant germ cell tumor and therefore most experts consider it as a non-seminomatous mixed germ cell tumor.

Pure polyembryoma is exceptionally rare. All the reported cases were associated with other neoplastic germ cell elements, mainly yolk sac component admixed with immature or mature teratoma[3,4]. In our case, we have also found mature teratoma component along with predominant polyembryoma admixed with yolk sac tumor. Elevated serum AFP level is well explained in this case but elevated β-HCG level may be due to focal trophoblastc differentiation which was not obvious even after multiple sections examined.

Histogenesis of polyembryoma is from pleuri-potent malignant embryonal cells [5,6]. Histology shows numerous embryoid bodies surrounded by primitive extra-embryonic mesenchyme. The embryoid bodies may be well differentiated to less differentiate or malformed [1]. Well differentiated embryoid bodies show embryonic disc, amniotic cavity on one side and yolk sac on opposite side, as shown in our case.

Tumor markers of polyembryoma include HCG and AFP. The source of HCG is syncytotrophoblastic cells close to embryoid bodies. AFP is derived from cuboidal cells of yolk sac cavity and hepatoid tissue present in the tumor [7].

Regarding review of literature, Bakaris *et al* reported a testicular tumor with high serum level of AFP in a 17 year old male [8] and this case report was very much similar to our case.

Carlomagno *et al* reported a case of testicular polyembryoma following chemotherapy for Non-Hodgkins' Lymphoma [9]. In our case, no such relevant past history was present.

In conclusion, polyembryoma is perhaps a peculiar morphologic entity amongst all gonadal germ cell tumors showing recapitulation of very early embryonic development.

Declaration of conflicting interests

The authors declared no conflicts of interest with respect to the authorship and/or publication of this article.

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