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# Teratocarcinoma In A Young Boy- An Unusual Presentation



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## ABSTRACT

Germ cell tumours arise by transformation of a germ cell that during its normal lifespan undergoes a series of proliferation and differentiation events. Teratocarcinoma is a malignant mixed non-seminomatous germ cell tumour (NSGCT). For majority of the patients, the diagnosis of testicular cancer can be included or excluded with physical examination and serum tumour markers. We present an unusual case of teratocarcinoma in a 12 year old boy, who complained of testicular mass after a freak accident.



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## INTRODUCTION

“Terato” in Greek roughly means monster.<sup>1</sup> Teratocarcinoma is a malignant mixed non-seminomatous germ cell tumour (NSGCT). The overall incidence of testicular tumours is 1%-2% of all male malignancies, and mixed testicular tumours comprise about 40% of all testicular tumours.<sup>2</sup> Teratocarcinomas accounts for about 25% of these mixed testicular tumours. Teratocarcinoma is a combination of a teratoma and an embryonal cell carcinoma, and its behaviour and outcome is similar to embryonal carcinoma, which is the more aggressive component.<sup>2</sup> We present an unusual case of teratocarcinoma in a 12 year old boy, who complained of testicular mass after a freak accident.

## CASE SUMMARY

A 12 years old boy presented to the surgery outpatient department with complaints of mass in the right testis for the last 2 years. There was a history of injury to the testis during fall from a bicycle. He noticed a swelling in the testis after a few days of injury. The swelling was progressive with a dull ache in the lower abdomen and dragging sensation in the testis. On physical examination the testis was tender and the tumour mass was firm, hard and immobile. The contralateral testis appeared to be normal.

Scrotal ultrasonography showed a solid heterogenous mass with cystic changes in the testis. Chest radiograph was normal. Computed tomography (CT) showed a heterogenous solid, firm mass, without any retroperitoneal lymph node enlargement. Serum Alpha-fetoprotein (AFP) was elevated to the level of 100 ng/ml and Human Chorionic Gonadotropin (HCG) was also raised (110 ng/ml). Under the impression of a clinical stage I testicular tumour (tumour confined to the testis), right radical orchiectomy was performed, followed by cisplatin based adjuvant chemotherapy. Gross examination of the mass showed solid, firm growth with foci of necrosis. (Figure 1) On histopathological examination the mass was diagnosed to be a testicular teratocarcinoma with both the components of teratoma and embryonal carcinoma. (Figure 2 and 3) Right radical orchiectomy was performed, followed by 6 cycles of cisplatin based adjuvant chemotherapy. The postoperative recovery was uneventful. Follow-ups performed over the last 12 months showed no evidence of recurrence with normal AFP and HCG marker levels.

## DISCUSSION

Testicular cancer, although relatively rare, is the most common malignancy among men between 15 to 35 years of age. Prior to the introduction of cisplatin based chemotherapy in the mid 1970's, testicular cancer accounted for 11.4% of all cancer deaths in the 25-34 year age group.<sup>3</sup> Lately, with the introduction of Platinum based chemotherapy regimens, it is now expected that up to 95% of patients with early stage testicular cancer, and 70% to 80% of patients with advanced disease will survive.<sup>4</sup>

The diagnosis of testicular cancer is not difficult, about 95% of solid testicular masses are neoplastic. Combined serum tumour markers Alpha-fetoprotein (AFP) and Human Chorionic Gonadotropin (HCG) are elevated in 90% of the patients.<sup>5,6</sup> For majority of the patients, the diagnosis of testicular cancer can be included or excluded with physical examination and serum tumour markers. After a testicular mass has been identified by physical examination or ultrasonographic study and tumour markers have been tested, the patient must undergo a radical inguinal orchiectomy with early clamping of the spermatic cord. The orchiectomy specimen must be carefully analyzed by the pathologist because the local tumour stage and histologic findings have prognostic significance.<sup>7</sup> Histologic type can be initially divided into seminomatous and non-seminomatous.

Germ cell tumours arise by transformation of a germ cell that during its normal lifespan undergoes a series of proliferation and differentiation events that culminate in the formation of gametes.<sup>8</sup> Uniquely, transformed germ cells exhibit the potential to initiate molecular pathways resembling in part those happen during normal human development, as evidenced by the array of histologies observed within the tumour specimens.<sup>9</sup> The histologies range from seminomas that resemble undifferentiated germ cells to non-seminomas that resemble early zygotic differentiation (embryonal carcinoma), embryonal somatic differentiation (teratoma) and extraembryonic differentiation (yolk sac tumour, choriocarcinoma).

Macroscopically, these tumours have a variegated appearance, with cystic and solid areas with or without hemorrhage or necrosis. Histologically the tumour can have a single or a mixed histologic pattern. A teratocarcinoma is a mixed germ cell tumour having a mixed histology of both a teratoma and an embryonal carcinoma. The presence and percentage (>30%) of an

embryonal carcinoma carries an adverse prognosis and increased chances of retroperitoneal metastasis and a retroperitoneal relapse. Increased primary stage (pT2 or greater) and vascular invasion are other poor prognostic factors.<sup>7</sup> Increased levels of serum HCG indicate the presence of syncytiotrophoblastic cells either singly or as part of choriocarcinoma. Elevated serum levels of AFP are usually seen in tumours containing yolk sac elements. Teratomatous glands may also cause a serum elevation of AFP.

Clinical stage 1 (CS 1) non-seminomatous germ cell tumours (NSGCT), defined as disease limited to the testis with normal abdominal and chest computed tomographic (CT) scans, and normal serum tumour markers post orchiectomy. Even with best treatment modalities present controversy still exists regarding the optimal management of clinical stage 1 non-seminomatous germ cell tumours (NSGCT). The presentation of NSGCT confined clinically to the testis (CS 1) is associated with a 30-50% incidence of occult retroperitoneal metastases (pathologic Stage 2) creating the controversy regarding "the best" treatment modality. Currently, three approaches are considered for treatment in Stage 1 NSGCT: retroperitoneal lymph node dissection (RPLND), surveillance, and primary chemotherapy, all with equal cure rates at 99%. RPLND as well as adjuvant chemotherapy without risk assessment will over-treat about 70% of patients. It is therefore essential to identify risk factors identifying patients at high risk of occult metastatic disease.<sup>10</sup> The rationale for adjuvant chemotherapy is that it dramatically lowers the relapse rate and requires fewer cycles of chemotherapy than would be needed if disseminated disease develops.<sup>10</sup> Our patient responded well to right radical orchiectomy and cisplatin based adjuvant chemotherapy.

## CONCLUSION

Testicular tumours are the most common solid malignancy in young adults. These tumours are highly amenable to treatment, but an early and adequate diagnosis is of utmost importance. A detailed histopathological examination with further sub-typing of the tumour is necessary in all NSGCT's for proper treatment and to prevent metastasis at an early stage.

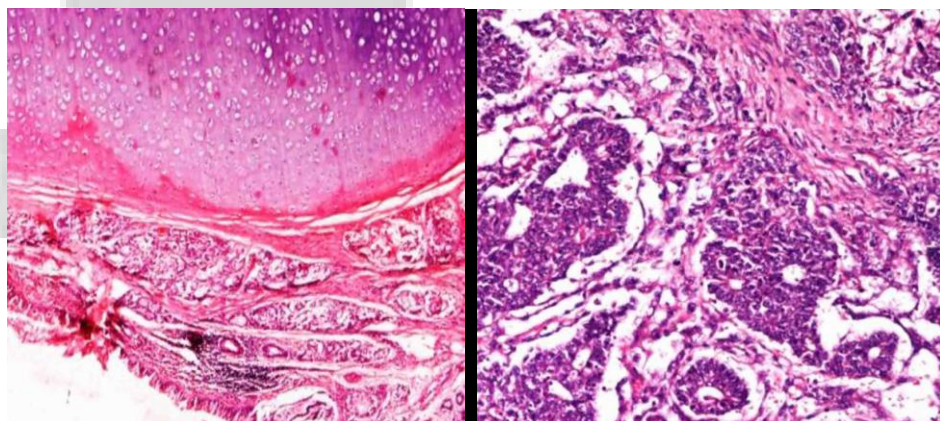
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## FIGURES



**Figure 1**



**Figure 2**

**Figure 3**