CASE REPORT

PRIMARY TESTICULAR DIFFUSE LARGE B-CELL LYMPHOMA OF THE NON-GERMINAL CENTRE TYPE - CASE REPORT WITH A NOTE ON IMPRINT CYTOLOGY

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ABSTRACT: Primary Diffuse Large B–Cell Lymphoma (DLBCL) of the testis is a rare subtype of testicular tumor, commonly seen in the adult age group. With the advent of immunohistochemistry, it has been further categorized into germinal center and non-germinal center types based on markers like Mum-1 and Bcl2 positivity, both having different prognostic implications. Our patient was an 80-year-old man, who presented with painless, enlarging right-sided testicular mass since two months, and no other complaints. Ultrasound showed features of a hypoechoic mass replacing the enlarged testis, with adjacent fluid collection suspicious of a testicular tumor. After a high end orchidectomy, the specimen was sent for histopathological examination. Imprint cytology smears of the fresh specimen were taken to study the morphological features of the tumor, and the diagnosis after complete workup, including immunohistochemistry was Primary Diffuse large B cell lymphoma of the testis of the Non–germinal center type. We present this case not only because of the rarity of this entity, but also to focus on the imprint cytological features of DLBCL, the documentation of which is limited in literature.

KEYWORDS: Testicular lymphomas, MuM-1, germinal centre and non germinal centre type, DCBL

INTRODUCTION: Primary testicular lymphoma is a collection of neoplasms that comprises only 1% to 9% of testicular neoplasms. However it is the most common malignant testicular tumor in men older than 50 years. There are various subtypes, including Diffuse Large B-Cell Lymphoma (DLBCL), Burkitt lymphoma and follicular lymphoma. A new subtype B–cell lymphoma unclassified has been described. Although histopathology and Immunohistochemistry clinch the final diagnosis, imprint cytology, which is a very simple and cost-effective technique, can provide clues to narrow down the diagnosis of testicular tumors.

CASE REPORT: An 80 year old, poorly built and nourished man presented to the surgical outpatient department with complaints of painless, enlarging right sided testicular mass. Ultrasound showed a hypoechoic mass, suspicious of a testicular neoplasm, involving the right testis with fluid collection in the adjacent tissue. Biochemical parameters including testicular tumor markers were within normal limits. A high end orchidectomy was done and the specimen sent for histopathological examination. On gross, the testis was enlarged, measuring 12 x 4 x 3 cms, with one portion showing a cystic area, attached spermatic cord measured 5 cms in length. Cut section – showed a grey white to tan tumor mass, with few areas of softening, with barely preserved normal testicular tissue. Adjacent to this mass was an area of cystic change exuding thin, watery, serous fluid [Fig1]. Imprint smears were taken from the mass. Smears were highly cellular and showed predominantly discohesive cells, with occasional clustering. The cells were large, had eosinophilic cytoplasm, irregular nuclear membranes...
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and prominent nuclei. [Fig 2] Few mitotic figures were also seen. On histopathological examination, section showed sheets of diffusely infiltrating discohesive cells, completely obliterating the seminiferous tubules. The cells were medium to large sized, with vesicular nuclei, many having nucleoli. [Fig 3a and fig 3b]. With a provisional diagnosis of anaplastic seminoma, undifferentiated carcinoma and lymphoma marker studied were done. The cells were positive for CD-20, Mum-1 and LCA and negative for CD3, CD10, Bcl-6, CD117, and CD 5, with the Ki-67 index being 70%. The final diagnosis was Primary Testicular Diffuse Large B-Cell lymphoma of the non-germinal type. The distal surgical end was negative for tumor deposits. The patient underwent full staging for lymphoma including tomography of the chest, abdomen, pelvis and bone marrow biopsy. None revealed extratesticular involvement by lymphoma or any lymph nodes. The patient is now being treated by chemotherapy.

DISCUSSION: Testicular lymphoma was first described by Malassez and Curling in 1886, and constitute only 1-7% of all testicular neoplasms and less than 1% of all non-Hodgkin’s lymphomas. In adult testis, primary DLCBL is the single, most frequent lymphoma, (80-90%), whereas the majority of the testicular lymphomas in children represent secondary involvement by Burkitt Lymphoma, DLCBL or lymphoblastic lymphoma.1

Although common in the elderly, with the increasing incidence of HIV infection, more recent studies report a higher percentage and a broader age spectrum for this entity. The typical presentation is a painless testicular mass of variable size that is usually unilateral; more commonly right sided with bilateral involvement being seen in up to 10% of the cases.1, 2 Hydrocele may be present in up to 40% of the cases, which was also seen in our case.

On Ultrasound examination, the normal homogenous echogenic testis is replaced focally or diffusely with hypo echoic, vascular lymphomatous tissue, indicating its infiltrative but non-destructive characteristics. Tumor markers like Beta HCG and alfa-feto protein are rarely elevated.1, Although FNAC is non-traumatic and easy to carry out, the method failed to develop into a routine investigation for testicular swellings, possibly due to the fear of needling trauma and local tumor implantation as well as lack of information on interstitial and tubular basement membrane on FNA smears.3

The diagnostic accuracy of cytological examination in testicular tumors has been reported to be extremely high. Although previous studied have mentioned cytological features of seminoma, embryonal carcinoma and metastatic lesions, the documentation of DLCBL is very limited in literature. We found a predominantly discohesive pattern of cells suggesting lymphoid malignancy, but also additional features like irregular nuclear membrane and conspicuous nuclei were noted, similar to primary nodal DLCBL. Although undifferentiated carcinoma looks similar the finding of cohesive cell clusters includes this entity. These were similar to features observed by Kim H4.

Histopathological examination of DLCBL shows sheets of discohesive cells infiltrating diffusely, producing wide separation of normal structures. Cells have moderate cytoplasm with vesicular nuclei, many showing prominent nucleoli. Interstitial fibrosis and tubular hyalinization are normally seen. In our case the entire testicular tissue was replaced by the tumor, with the adjacent area showing cystic change.1

Using gene expression DLCBL has been classified into germinal center B-Cell type, showing CD10 and/or BCL-6 positivity and Mum-1 negativity, with the opposite marker results indicating
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non-germinal center type DLBCL. The Ki-67 staining is usually high > 40%. The non-germinal type is usually associated with a bad prognosis.\(^5\,^6\)

The differential diagnosis of DLBCL includes germ cell tumors such as classical seminoma, spermatocseminoma and embryonal carcinoma and non-neoplastic entities like granulomatous and viral orchitis, which need to be ruled out at times using markers.

Orchidectomy is the established diagnostic and therapeutic procedure in cases of testicular lymphomas. Further therapeutic decision is influenced by age, performance status and is usually multimodal using a combination of chemo and radiotherapy depending on the stage.\(^7\)

CONCLUSION: Primary Diffuse Large B-cell lymphoma though a common testicular lymphoma, is now subcategorized as germinal and non-germinal type with the latter having a better prognosis. Although differential diagnoses can be many, careful study of the cytological features of an imprint is not only easy but can also help narrow down the diagnosis, which can further be confirmed after histopathology and marker studies.

REFERENCES:

Gross orchidectomy specimen, cut open showing a grey white to tan tumor replacing the entire testis, with an adjacent area of cystic change.

Fig. 1
Imprint cytology smears taken from the tumor showing discohesive cells, showing irregular membranes and prominent nucleoli (arrow).

H and E stain 10X showing infiltrating malignant lymphoma, with small strip of compressed paratesticular tissue.

H and E stain 40x showing sheets of malignant lymphoid cells, moderate in size with cell showing prominent nucleoli (arrow)

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