

Report of an Unusual Case: Testicular Involvement of Chronic Myeloid Leukemia 10 Years after the Complete Response

CEM NEDIM YUCETURK¹, BERAT CEM OZGUR², HASMET SARICI³, PELIN BORCEK⁴, ONUR TELLİ⁵

ABSTRACT

Testicular extra-medullary myeloid cell tumours are rare tumours presenting in most cases with painless testicular swelling. We present here a case of 21-year-old man with painless scrotal swelling. From his medical history, he was treated by allogenic bone-marrow transplantation and chemotherapy 10 years ago because of chronic myeloid leukemia. The pathology of orchiectomy specimen revealed malign cells with blastic cell infiltration means a late relapse of chronic myeloid leukemia. The patient has been in hematological remission and no evidence of any myeloid disorders by 10 years' follow up. Although testicular involvement is a rare and an unusual event in blast crisis of chronic myeloid leukemia, extramedullary myeloid cell tumour should be considered in the diagnosis of intratesticular tumours.

Keywords: Testicular leukemia, Extramedullary myeloid cell tumor, Testis

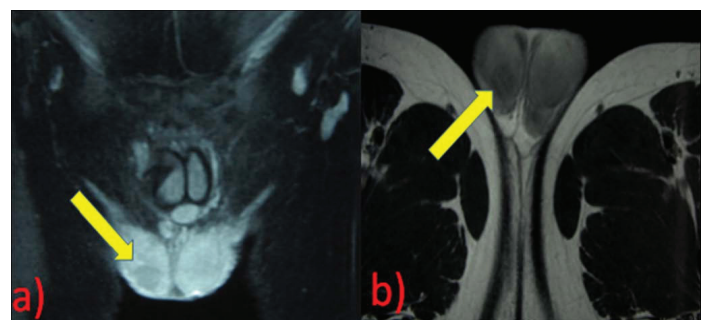
CASE REPORT

An Extra-medullary Myeloid Cell Tumour (EMCT) has been defined as a localized malign tumour of myeloid origin that occurs at an extramedullary location [1]. The presence varies in the literature as granulocytic sarcoma, chloroma, etc. [2]. Although many anatomic locations can be seen most commonly in soft tissues, lymph nodes, bone, skin, gastrointestinal tract and orbit, testicular involvement is rare [3-5]. The incidence of testicular EMCT is pointed out 4-5% in the literature. Clinically, like the other malignant testicular tumours, scrotal mass is usual in testicular EMCT. We are reporting here a case of testicular involvement of chronic myeloid leukemia where the only symptom is a painless scrotal swelling.

A 21-year-old man presented to our outpatient clinic with right side scrotal swelling of two months' duration. The patient had no complaints such as urethral discharge, fever, nausea, vomiting or scrotal pain. There was no history of trauma or surgery. A physical examination revealed a painless nodule nearly 2 cm in diameter in the right testis. Urinalysis did not show any abnormality. The complete blood count was in normal levels. Serum levels of α -fetoprotein and β -human chorionic gonadotrophin were within the normal ranges. Scrotal ultrasonography showed a well-defined 1.2 x 1.0 cm hypoechoic solitary mass in the right testis. Magnetic resonance imaging has demonstrated heterogeneous low signal intensity mass on T1 and T2 images, nearly 2.0 cm diameter [Table/Fig-1] in the lower pole of the testis.

High inguinal partial orchiectomy was planned for the patient. Peroperative findings were; two nearby lesions in the lower pole of the testis 1.5 x 0.5 cm and 0.5 x 0.5 cm in diameter. Tumour excision and biopsies of the resection bed were performed. When his frozen examination revealed 'suspicious for hematological malignancy', it was planned to perform orchiectomy. There were no complications throughout the surgery. We also performed biopsy to the left testis and the pathological examination was normal whereas the right orchiectomy material revealed malign cells with blastic cell infiltration. Detailed history demonstrated that he had forgotten to tell us his treatment because of chronic myeloid leukemia 10 years ago with a complete response by means of allogenic bone-marrow transplantation and chemotherapy. According to these findings, the patient is diagnosed as a late relapse of chronic myeloid leukemia involving the testis. The patient was then referred to medical oncology department for further investigation and treatment. Oncologists detected leukemic retinopathy and orbital infiltration.

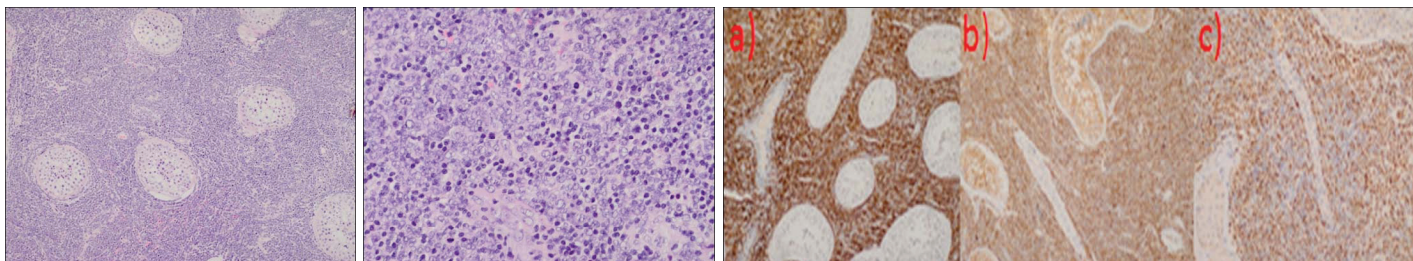
A testicular tissue of 3.5 cm diameter was submitted for intra-operative frozen section with a suspect diagnosis of testicular malignant mass. Serial sections of the material demonstrated a regular, orange coloured testicular tissue with a whitish area of indiscriminate borders. Frozen sections were taken from this focus, which displayed a diffuse, monotonous intertubular infiltration of tumour cells with large nuclei, open chromatin pattern and brisk mitotic activity. Since the patient's previous history was not supplied during intraoperative consultation, the frozen diagnosis was 'suspicious for hematological malignancy. Permanent sections revealed the same histomorphological pattern with a diffuse tumoural infiltration between normal seminiferous tubules [Table/Fig-2]. The nuclei possessed open chromatin with irregular nuclear membranes, small basophilic nucleoli adjacent to nuclear membranes and inconspicuous cytoplasm [Table/Fig-3]. Mitotic figures were readily identified. Immunohistochemical studies showed diffuse membranous positivity with CD 20, CD 10, CD 99 and CD 79a and strong and diffuse nuclear positivity with TdT [Table/Fig-4]. Proliferative activity with MIB-1 was approximately 60%. CD34, MPO, CD30, bcl-6, CD 117, pancytokeratin, desmin and myoglobin were negative. Few mature lymphocytes among tumoural cells were positive for CD3. The final report was 'Diffuse B lymphoblast infiltration of testicular tissue'. Because the patient had a previous history of bone marrow transplantation for CML, the histopathological appearance was interpreted as an extramedullary blastic crisis with B lymphoblastic origin.



[Table/Fig-1]: Magnetic resonance image of right testis with the lesion (a) T2-enhanced (b) T1-enhanced (The arrow shows lesion of testis)

DISCUSSION

Except the known indications like a tumour in solitary testis and bilateral tumours, partial orchiectomy can also be performed in



[Table/Fig-2]: Diffuse tumoral infiltration between seminiferous tubules (hematoxylin-eosin, original magnification X 100)

[Table/Fig-3]: Tumour is composed of cells with enlarged nuclei, open chromatin, irregular nuclear membranes and small nucleoli. Mitotic figures are readily identified. (hematoxylin-eosin, original magnification X 400)

[Table/Fig-4]: (a) Diffuse CD 20 positivity (CD 20, original magnification X200)

(b) Diffuse CD 99 positivity (CD 99, original magnification X 200) (c) Diffuse TdT positivity (TdT, original magnification X 400)

patients in testicular mass with negative tumour markers that may be possibly benign tumours. In our patient, the lesion was in benign nature according to the radiologic images so that at first we were planning to perform partial orchiectomy. After learning from his medical history that he was treated with allogeneic bone-marrow transplantation and chemotherapy because of chronic myeloid leukemia, and when frozen pathology defined a suspect of haematologic malignancy as well as the possibility of testicular involvement in blast crisis of chronic myeloid leukemia, radical inguinal orchiectomy was chosen. Testicular leukemia may be the primary manifestation of leukemia or an established leukemia elsewhere in the body. In our case, the diagnosis was as; blast crisis of extramedullary involvement of chronic myeloid leukemia with multiple testicular masses as main manifestation. The differential diagnosis for infiltrative process involving the testis includes; orchitis, sarcoidosis, lymphoma, benign cysts, tuberculosis and germ/ non-germ cell neoplasia of the testis.

There are some small series of extramedullary blast crisis of chronic myeloid leukemia. In one of the largest series; Cervantes et al., showed, out of more than a hundred cases of blastic crisis of Ph⁺-positive chronic myeloid leukemia, 13 had extramedullary involvement, lymph nodes were the commonest extramedullary site of blast crisis (8 cases), followed by osteoperiosteal and central nervous system. The median survival of the patients after the onset of extramedullary involvement was shorter than a year [6]. Bane et al. demonstrated renal involvement with uncontrollable unilateral hematuria in chronic myelomonocytic leukemia and was treated with nephrectomy and observed conservatively but seven months later, the patient died because of marrow replacement and occurring sepsis [7]. Literature reviews revealed four reports of testicular involvement in blast crisis of chronic myeloid leukemia [8-10]. Among these four patients there were children and showed the involvement of both testes and central nervous system [11]. Rawal et al. have reported a primer case of testicular extramedullary myeloid cell tumour with an acute testicular hemorrhage which was interpreted as a hematoma into the tumour. After orchiectomy, he has been treated with induction chemotherapy and was followed by radiation therapy to the contralateral testis [12]. Corcoran et al. performed inguinal orchiectomy for an unilateral testicular mass with chronic myelomonocytic leukemia [13]. Despite several therapy modalities, overall survival and the prognosis of blastic crisis in chronic myeloid leukemia is poor.

CONCLUSION

Although it is an extremely rare event, EMCT must be considered in the differential diagnosis of unilateral testicular masses in patients with myelodysplastic disease and also late relapses of the other haematological diseases must be in mind. Blood testis barrier may be a factor of early and late relapses since this barrier decreases the allowing of many chemotherapy regimens [14]. Routine controls must include genital examination and radiologic evaluation if a suspicion occurs.

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PARTICULARS OF CONTRIBUTORS:

1. Ankara Training and Research Hospital, Urology Clinic, Ankara, Turkey.
2. Ankara Training and Research Hospital, Urology Clinic, Ankara, Turkey.
3. Ankara Training and Research Hospital, Urology Clinic, Ankara, Turkey.
4. Ankara Training and Research Hospital, Pathology Clinic, Ankara, Turkey.
5. Ankara Training and Research Hospital, Urology Clinic, Ankara, Turkey.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:

Dr. Onur Telli,
Ankara Training and Research Hospital Uluçanlar Cd. No:89 Altındag / Ankara, Turkey.
Phone: +905065987517, E-mail: onurtelli@yahoo.com

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