Original article

Testicular cancers in Radiation and Isotope Centre, Khartoum, Sudan: a retrospective study

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Abstract:

This is a retrospective study of 44 cases of testicular cancers treated at the Radiation and Isotopes Center of Khartoum (RICK).The mean age was 29.9 years. Six patients (13.6%) had undescended testicles; 24 patients (54.4%) presented with stages three and four. Only 20 patients (45.4%) survived for five years and more.

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Introduction:

Testicular cancer is rare with an incidence of about 1% of all male cancers, but they constitute the commonest cancers in men between the ages of 15 – 35 years [(1)]. Its incidence varies in different parts of the world. Denmark has the highest incidence of about 4.9 per100 000 annually. Also the white males in the USA and western Europe have a high incidence, whereas the incidence is rare in Africans, Asians and North American blacks[,(2,3,4,5)] . Ninety-five-percent of testicular cancers are germ cell tumors (GCT), while non-germ cell tumors (NGCT) form 5%. About 40 -- 50 % of GCT are seminomas [(6)]. The risk factors include: cryptorchidism, Klinefelter syndrome, family history among first degree relatives, the presence of a contralateral tumor and infertility. Cryptorchidism increases the risk by 4 – 8 folds. For intra abdominal testicle the risk is 5%, while for inguinal testicle the risk is 1% [(7,8,9)] . Orchidopexy in boys less than 6 years of age reduces the risk by 5—20% [(9)]. Walsh et-al reported that infertile men are 3 times more likely to develop testicular cancer [(10)].

Method:

This is a retrospective study of 44 patients who were treated at the Radiation and Isotopes center of Khartoum (RICK), Sudan, during the period between August 2004 and September 2012. All the paraffin sections pathology were centrally reviewed and confirmed. Ethical approval was obtained from the hospital ethical committee. Data was collected from RICK patients' records; this included: age, residence, stage, pathology, work up, treatment details and outcome. The SPSS version seven was used for statistical analysis, and the Chi square test used for significance testing ($p < 0.05$).

The work-up included: CBC, LFT, UE and creatinine clearance. CT chest and abdomino pelvis, Beta human chorionic gonadotropin, (BHCG), Alpha feto protein, (AFP) for teratoma patients, and Lactic Dehydrogenase, (LDH) for both teratmoas and seminoma patients.

Patients with stage one seminomas were treated with inguinal orchiectomy and radiotherapy, dog leg technique, 20 Gy in 15 fractions by lineac 6 MV or cobalt 60. One patient was treated with two cycles of Carboplatin AUC 6. Surveillance was not offered due to distances and cost.

For stage two seminomas patients were treated with inguinal orchiectomy, and radiotherapy, inverted Y 30 Gy, 2GY per fraction, by cobalt 60 or lineac 6M v. Seminomas patients with stage 2 B, 2 C, 3A , 3B and 3C, were treated with chemotherapy, 3 - 4 cycles of BEP (Cisplatinum, Bleomycine, Etoposide).

Those with residual disease after chemotherapy, as confirmed by CT scan, were given radiotherapy 30 Gy in 15 fractions.

Stage four seminomas patients, those with very poor performance were given supportive treatment and no chemotherapy. Fit patients were given BEP chemotherapy. Patients with stage one teratomas: 2 patients were offered surveillance only and remained well without evidence of recurrence or metastases for five years. Others were given two cycles of BEP.

Fit patients with Stages 2 A,B,C and stage 3 A,B,C and stage four were given chemotherapy 3-4 cycles of BEP.

Stage four patients with poor performance status were given palliative treatment. Patients with mixed seminomas and teratomas were treated as teratomas.

Salvage chemotherapy: Nine patients (about 20 %) had second line chemotherapy for residual or metastatic disease after first line chemo. Ifosfamide, Vinblastine and Paclitaxel.

Results:

The age range was 11--79 years, mean age 29.9 years, and peak at age 31-40. (n= 35, 78.6%). Residence: 32 (70.7%) of patients were from central and north Sudan,

Length of History: 24 (54.4 %) of them presented with more than six months history.

Stage distribution: 54.4% presented with Stages three and four (Table 1).

Table 1. Distribution of cases according to The Royal Marsden Staging

Stage	n (%)
Stage 1	4 (9.1)
Stage 2A	4 (9.1)
Stage 2B	5 (11.4)
Stage 2C	7 (15.9)
Stage 3A	3 (6.8)
Stage 3B	6 (13.6)
Stage 3C	8 (18.2)
Stage 4	7 (15.9)
Total	44 (100.0)

Regarding surgery: 33 patients (75%) had trans-inguinal orchiectomy; six (15.6 %) had guided biopsies; four (9.1%) and one (2.3%) trans-scrotal biopsy had laparotomies (Table 2).

Table 2. Distribution of cases according to type of surgery

Type of surgery	n (%)
Inguinal Orchiectomy	33 (75.0)
Trans scrotal Orchiectomy	1 (2.3)
Laparotomy	4 (9.1)
Guided Biopsy	6 (13.6)
Total	44 (100.0)

Pathologically: 68.2% were seminomas, 13.6% mixed seminomas and teratomas while 18.2% were teratomas (Table 3).

Table 3. Pathological distribution

Type of Pathology	n	(%)
Seminomas (n=30, 68.2%)		
Spermatocytic	11	(25)
Classical	4	(9.1)
Anaplastic seminoma	7	(15.9)
Seminoma Subtype not specified	8	(18,2)
Mixed Seminoma + Teratoma	6	(13.6)
Teratomas	8	(18.2)
	(MDT = 5, MIT= 2, MTT =1)	
Interstitial Cell tumor	0	(0)
Total	44	(100.0)

Alpha fetoprotein (AFP) was raised in five teratoma patients; both AFP and BHCG were raised in nine teratoma patients.

Treatment outcomes:

1. 20 patients (45.4%) survived for 5 years or

more. They were stages 1, 2 A,B and C, the main prognostic factors were: stage, age and length of history, $p < 0.001$.

2. 18 patients (40.9%) died: 13= < 1year after diagnosis. 4 = died two years after diagnosis; one patient died 3 years after diagnosis. They were stages three and four patients.
3. 3 Patients disappeared after diagnosis; they didn't have any treatment, and couldn't be traced.
4. 3 patients had 1 – 2 cycles of chemotherapy and disappeared and couldn't be traced.

Discussion:

Testicular cancer is rare among Africans. In this study it formed < 1.5% of all male cancers treated during that period in RICK. Other African countries range between 0.5 – 2 %, [11,12,13] . The mean age is 29.9 years, similar to other reported series from Africa, [11,12]. The most important risk factor in this study was cryptorchidism in 6 patients (13.6%) which is higher than in other series, putting in mind that our sample is small. A study from Tanzania reported an incidence of 10.7 %, while a study from Kenya reported 10.3 % [12,13] .

The majority of patients were from central and north Sudan. Almost 90% of patients presented with a history of more than 6 months; so, 24 patients (54.4 %) presented with stages three and four (Royal Marsden Staging). A study from Kenya reported 64.1% of patients presented with stage 4; while a study from Tanzania, reported stage 3 =29.2% and stage 4 = 33.3%, [11] .Thirty (68.2%) of these patients had seminomas, 6 (13.6%) were mixed seminomas and teratomas and the rest were teratomas. No interstitial cell tumors or lymphomas were encountered.

The incidence of seminomas is higher than usual. A study from Tunisia reported 48.8 % seminomas. While a study from Nigeria reported 33.3% seminomas[14]. The prognosis of these patients was not good due to: long history, ignorance, poverty and illiteracy; hence, advanced stages at diagnosis, in spite of the fact that most of them had seminomas which have a better prognosis compared to teratomas. Only 45.4% of patients survived for 5 years and more. A study from Tanzania reported 5-years' survival rate of 22.2% and 38.8% in Kenya [12]. While in developed countries the 5- years survival during the last three decades increased from 63 to >90% [15].

Conclusion:

There are a lot of challenges in the management of testicular cancers in Sudan, including: lack of awareness, delayed presentation, advanced stages at presentation and the fact that a considerable number of patients don't report for regular follow-up after initial treatment. Inspite of that, treatment outcome of these patients is much better compared to studies from other African countries, but much worse than in developed countries .There is a need to increase awareness about this cancer among the public and the medicals and paramedical in Sudan.

Conflict of interest: none

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