Original Article

The pathological spectrum of malignant testicular tumours in northern Pakistan

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Abstract

Objective: To determine the pattern of testicular malignant tumours in northern Pakistan.

Methods: The study included all malignant testicular tumours, diagnosed from January 2001 to June 2006. All histologically diagnosed malignant tumours of testis were retrieved from the case files. Basic epidemiological data regarding each case was collected from the request forms. The data was then analysed for the site of involvement, age distribution and histological types of tumours.

Results: During the study period a total of 107 patients had testicular malignancies, constituting 0.74% of all malignant tumours and 1.24% of all male malignancies diagnosed during this period. Peak incidence was in 30-40 years age group and a second peak was observed in the above 60 age group. Germ cell tumours (67%) were the most frequent histological type followed by non Hodgkin lymphoma; the latter particularly was responsible for the peak in the older age groups. Statistical analysis showed that there was no significant increase registration of testicular tumours as compared to our previous analysis.

Conclusion: The study points out that the incidence of testicular cancer is low in our set up as in other Asian countries. The histological pattern is predictable except that the testicular non Hodgkin lymphoma is more contrary, to reported elsewhere and probably responsible for the second peak observed in the present series (JPMA 57:499:2007).

Introduction

The frequency of male genital cancer varies in different geographical areas. It is said that worldwide 49,300 new cases of testicular cancer are diagnosed each year and a high incidence of testicular cancer is observed in Central Europe and generally in Caucasian population of developed countries.[1] A rapid increase has been observed in some of the European countries and testicular cancer is the most common malignancy in young men (15-34 years).[2] The mortality due to this form of cancer is however decreasing as a result of advances in treatment and early diagnosis. This decline is more pronounced in Northern and Western Europe; mortality trends are same in Romania and Bulgaria and are increasing in Portugal and Croatia.[1,2] The origin of majority of the tumours is from germ cells and more than half of the tumours may contain more than one tumour type. Although the exact aetiology of germ cell tumours is not known, the hypothesis is that the disease process starts in foetal life and consists of abnormal proliferation of primordial germ cells.[2,3] The germ cell tumours, the most frequent of testicular cancers are found more in the white than black men but recently increasing trends in black population of United States has been observed.[3] The peak incidence of these tumours is in the younger age groups and majority of the patients are seen in the third decade. The purpose of this analysis is to find out the pattern of testicular malignancies in our patient population and to compare it with other national and international studies.

Materials and Methods

Armed Forces Institute of Pathology, Rawalpindi receives specimens from various military and civil Institutions all over northern Pakistan. All histologically diagnosed malignant testicular tumours registered with AFIP tumour registry, were studied. Basic epidemiological data regarding each case was collected from the request forms, which were retrieved from the registry data. The study included all malignant tumours of testis, diagnosed from January 2001 to June 2006. The specimens were received in 10% formal saline. Gross examination of surgical specimens was performed and recorded on a proforma. Adequate representative tissue sections from the lesions were taken as described by Rosai.[4] The material was processed under standardized conditions for paraffin embedding. The sections were stained with haematoxylin and eosin (HandE). Special stains including immunohistochemical markers were used where, and when required. Each tumour was assigned ICD-O code[5], published by International Agency for Research on cancer (IARC). Students T test and chi-Square tests were used for statistical analysis

Results

During the study period 107 cases of testicular malignancies were registered, constituting, 0.7% of all

malignant tumours diagnosed during the same period and 1.24% of all male malignancies. Age distribution is shown in the Figure. Peak incidence was in 30-39 years of age group and majority of the cases (47%) were seen between 20-39 years of age. A small second peak was observed between 60-70 years age (Figure).

As per histological types, germ cell tumours were most frequent comprising 72 cases (67.3%) followed by 20 (18.7%) cases on Non Hodgkin's Lymphoma. A few cases of squamous cell carcinoma, metastatic tumours and sarcoma were also found and one case was labeled as undifferentiated carcinoma (Table 1). The histological types found in the second peak (Figure) were predominantly cases of malignant lymphoma (9 cases), followed by four cases of seminoma including one case of spermatocytic seminoma. The predominant histological type of lymphoma in this age group was diffuse large B cell type. One case of T cell lymphoma was also found. The histological type of paediatric age group (<15 years) was lymphoblastic lymphoma (2 cases) embryonal carcinoma (3 cases) and one case each of yolk sac tumour, seminoma, embryonal rhabdomyosarcoma and Burkitts lymphoma.

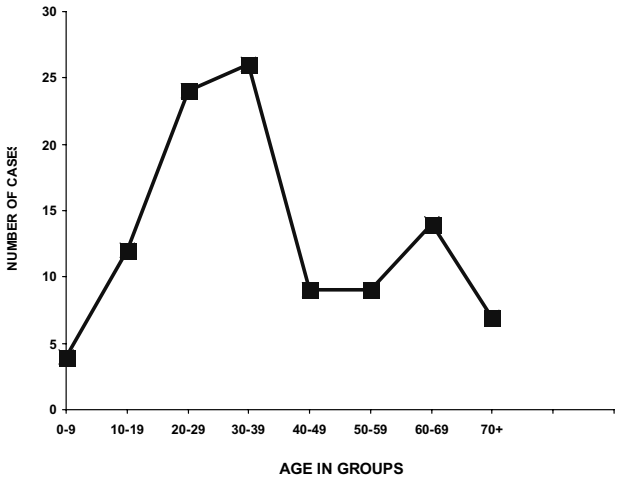

Figure: Age distribution of malignant testicular tumours.

Table 1. Main histological types of testicular tumours (n=107).

S.No.	Histological Type	Number of cases	Percentage
1.	Germ Cell tumours	72	67.28%
2.	Lymphoma	20	18.70%
3.	Sarcoma	7	6.54%
4.	Others*	8	7.48

* Others includes Squamous cell carcinoma = 4, metastatic = 3 and undifferentiated = 1.

Table-2. Histological types and subtypes of testicular tumours (n=72).

S.No.	Histological types and sub-types	No. of cases
	Seminomatous	32
	Non-Seminomatous	40
	Sub-Types of Non-Seminomatous tumours	
1	A) Embryonal Carcinoma	10
2	B) Yolk Sac Tumours	6
	C) Malignant Teratoma	9
	D) Mixed Germ Cell Tumours	15

Of the germ cell tumours, 32 (44%) were seminomatous and 40 (56%) were non-seminomatous (Table 2). In the non-seminomatous group, mixed germ cell tumours were predominant, followed by embryonal carcinoma, yolk sac tumour and malignant teratoma. The median age for seminoma patients was 35 years where as for non-seminomatous it was 23 years (embryonal carcinoma, yolk sac tumours malignant teratoma and mixed germ cell (MGC) tumours was 23.5, 13, 20 and 30 years respectively). The 95% confidence interval (CI) for mean was 32.69 to 40.02 for seminomatous and 20.42 to 27.53 for the non-seminomatous cases (16.32 to 31.88 for embryonal carcinoma, 2.95 to 23.05 for yolk sac tumours, 15.61 to 26.17 for malignant teratomas and 22.74 to 35.72 for the MGC tumours).

Comparison with the previous analysis[7], of same set up for any increased registration of testicular tumours was also done. After adjusting the increase in population and population growth rate, it was found that there was no significant increased registration for these tumours.

Discussion

Cancer of the testis accounts for 0.5% to 1.5% of all male cancers and more than forty nine thousand new cases are diagnosed each year. The highest incidence is in central Europe and mostly in the Caucasian population of developed countries. Testicular cancer is more common in higher socioeconomic groups. Although not established but hormonal and genetic factors seem to play a role along with other factors like influence of heat.[6] The incidence is low in Africa and Asia.[8] In the present study also the malignant tumours of the testes comprised 1.24% of all male malignant tumours. In analysis of Karachi division cases it was also found that malignant testicular tumours were 1.13% of all male malignancies.[9] These tumours can be found at all age groups particularly in the third and fourth decade of life.[8,10,11] The peak incidence in the present study was also between 30-40 years of age but we also observed another peak in 60+ year's age group. Such bimodal presentation is also not mentioned but it was found on further analysis that probably in the present series it was due to extra-nodal non Hodgkin's lymphoma (NHL). NHL are quite frequent in our set up[7,12], and that may be the reason for this second peak. The cases were labeled as primary

testicular NHL, after all the parameters were met to exclude any secondary involvement. Similarly in two other studies of non-Hodgkin's lymphoma of the testis, the median age of 66 years and 69 years were reported.[13,14] The median age for seminoma is a decade later to non-seminomatous tumours and same was found in the present series.[7] In majority of the series germ cell tumours are thought to be the most frequent type of malignancy, and 76 to 95% germ cell tumours are reported in different studies.[10,11,15,16] The highest incidences are in Denmark, Germany, Norway, Hungary and Switzerland.[17] In the present study germ cell tumours were 67%, similar as in other Asian countries[18], but in two studies from Pakistan 87% and >90% germ cell tumours have been reported.[10,19] In this study seminomatous were 44% and non-seminomatous 56% and almost same is reported in another study.[8] As in other studies, we observed the predominant yolk sac tumours in the paediatric patients and NHL in the elderly.[10,20]

Conclusion

The study concluded that Pakistan falls in the low incidence areas of testicular malignancies as are the other Asian countries. Although other histological pattern is predictable but testicular non Hodgkin lymphoma is more reported contrary to elsewhere and probably responsible for the second peak observed in the present series.

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