ORIGINAL ARTICLE

Histopathological Spectrum of Testicular Tumors a Single Center Experience

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ABSTRACT

Background: Testicular tumors are common in males of all age groups. The lesions range from benign to malignant. The treatment is different for different histologic subtypes.
Aim: To determine the frequency of different histopathological types of testicular tumours.
Place and duration of study: During a period of one year in 2009 hundred cases of orchidectomy specimens or testicular biopsies sent by all four surgical units of Mayo hospital to pathology department of King Edward Medical University (KEMU)
Methods: Study was conducted on hundred male patients who had undergone orchidectomy or testicular biopsy in surgical units of Mayo Hospital and their specimens were submitted to Pathology Department of King Edward Medical University (KEMU). Non–probability, purposive sampling was done.
Results: Among 100 cases the commonest tumor was seminoma (56%) cases followed by Mixed germ cell tumors were (22%), Non Hodgkin Lymphoma (9%) and teratoma (7%) of all the lesions. The rest of the lesions consisting of Rhabdomyosarcoma (2%) Yolk sac tumor, (3%) and metastatic tumors(1%). Right sided lesions were more common. Bilateral tumours were also seen. Age range was from 8 months to 75 years. The age distribution of the tumors shows a bimodal curve. The maximum number of cases fall in the adult age.
Conclusion: Histological sub typing is important for prognosis and follow up of the patient by oncologist
Keywords: Testicular tumors, Seminona, non seminomatous.

INTRODUCTION

Testicular tumour is the most common malignancy among young males[1]. There is a variable incidence among different countries, races and socioeconomic classes. In USA the annual incidence is 4 per 100,000 males[2]. Risk of development of these tumours increases with cryptorchidism and familial history of testicular tumours[3]. Although testicular cancer is an increasing problem in Northern European male population but has a much lower incidence in Asian countries[4,5].

There are two main varieties of testicular tumours: tumours of germ cell origin and non germ cell tumours which are derived from testicular stroma[6,7]. The germ cell tumours constitute the major bulk (approximately 95% of all testicular tumours) and are further divided into seminomas (40-45%),non seminomatous tumours (approximately 40-45%) and mixed germ cell tumours (approximately 10%)[8].The incidence of seminomas is found high in the 4th decade while the non seminomatous tumours are more common in 2nd to 3rd decade. Among the non seminomatous tumours are Embryonal carcinomas (approximately 25%), Yolk sac tumours (approx.15%), Malignant Teratoma (approximately 22.5%) and mixed tumours (approximately 37.5%)[5]. The combination of more than one tumour in a specimen is referred to as a mixed tumour. On the contrary, non germ cell tumours (Leydig cell tumours, Sertoli cell tumours and Theca tumours) form only 1% of all testicular tumours. Among other important tumours are lymphomas (approximately 4% of all testicular tumours) which are the most common tumours in elderly age group[9].

The clinical diagnosis is based on clinical examination aided with ultrasonographic findings, but the diagnosis and type of tumour is confirmed on histopathology. It is very important to sub type the tumor histologically as the treatment and follow up of the seminomatous, nonseminomatous tumors, lymphoma and other subtypes is very different. Although tumor markers like β-HCG and alpha feto protein, maybe helpful but gold standard is histopathology.
Most of the testicular tumours are recognizable with routine Haematoxylin and Eosin stained slides However, additional information regarding patients

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age and gross findings are also beneficial for supporting the diagnosis based on Haematoxylin and Eosin stains. Although immunohistochemical markers are available but diagnosis can be made on Haematoxylin and eosin stained sections. The study was conducted on the patients who had undergone orchiedectomy or testicular biopsy. Morphological aspects were taken into account while interpreting the testicular tumours. The frequency of various testicular tumours was calculated on the basis of histopathological diagnosis so that we can see which histological type is common in our setup. Sub typing helps the oncologist in treatment and follow up.

PATIENTS AND METHODS

A descriptive case series study was conducted on hundred male patients who had undergone orchidectomy or testicular biopsy in surgical units of Mayo hospital and their specimens were received in pathology department of King Edward Medical University(KEMU).

Relevant clinical data was recorded on a proforma. Three consultant histopathologists examined each case and their diagnosis was taken as confirmatory. Effect modifier like age was controlled through stratification.The results were subsequently compared with similar international and local studies. Specimens diagnosed as inflammatory and non neoplastic were excluded from the study.

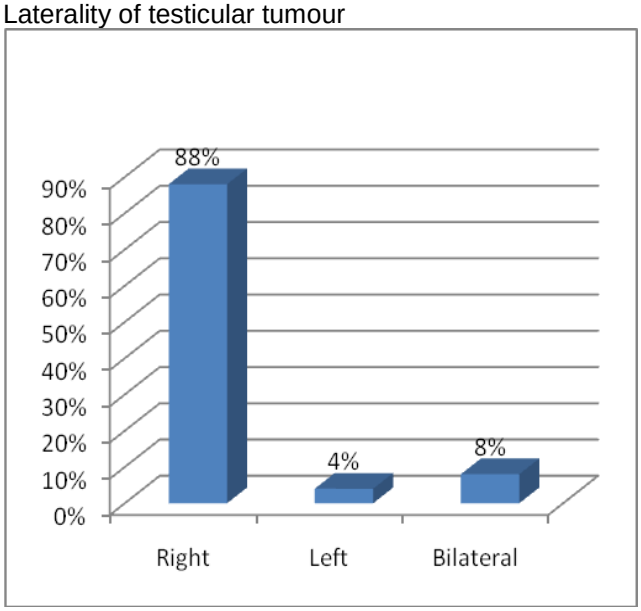
Data was entered and analysed on SPSS version 18.The qualitative variables like the symptoms of disease (painless enlargement of testis) and the type of tumour were taken into account and their frequencies and percentages were calculated.

The quantitative variables including age of patient were presented as Mean and Standard Deviation.

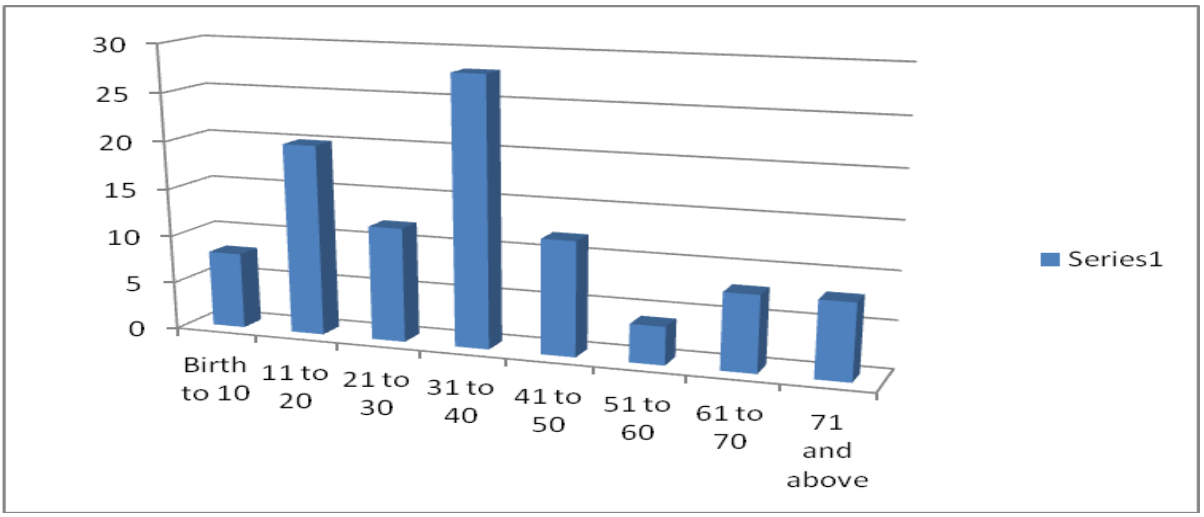
Histopathological diagnosis of testicular tumours

Diagnosis	N	%age
Seminoma	56	56%
Mixed germ cell	22	22%
Lymphoma	09	09%
Embryonal ca	00	0%
Rhabdomyosarcoma	2	2%
Yolk sac	03	3%
Teratoma	07	7%
Metastatic	01	1%
Total	100	100

Laterality of testicular tumour



Age distribution of testicular tumour



RESULTS

One hundred and twenty two cases had to be studied to collect a total of 100 study cases. 22 cases were excluded from the study because they either did not fulfill the inclusion criterion or fell within the exclusion criteria.

Of the 100 cases, a gross majority 88(88%) was of right sided testicular specimens while only four were from the left side. Eight cases had bilateral orchidectomy done for mass on both sides.

Total age range was from 8 months to 75 years with maximum number of patients falling in the fourth decade of life (n=28). The age distribution of the tumors shows a bimodal curve with a relative crests in the second and the fourth decades of life.

If the age groups are divided according to the different stages in life, there seems to be a clear preponderance for the testicular tumors to occur in the adult life (between 35 and 64 years).

By far the most frequently occurring diagnosis among this series of cases was seminoma 56(56%). From among these, 32 cases (32%) showed all the classical diagnostic features. Therefore these were labeled “classical seminoma”, to differentiate them from those which although qualified as seminomas, had less than the full plethora of features 24(24%). But since, for the purpose of study, we were following the WHO classification terminology, this differentiation was not reflected in the study.

Even in the mixed germ cell tumors variety (n=22), seminoma component could be identified, to a considerable extent in 20% of the mixed germ cell tumors. Whereas, significant anaplasia was seen in an additional two cases of seminomas to merit a diagnosis of anaplastic seminomas.

The third most common diagnosis among these was 9 cases of lymphoma which were of the Non-Hodgkin’s variety 09(9%). Rest of the tumors included 7 cases of teratoma followed by three cases each of Yolk Sac tumor, two cases of Rhabdomyosarcoma and one case of Metastatic Tumor.

DISCUSSION

Being one of the commonest malignancies of the early adulthood, testicular tumors merit serious attention regarding their occurrence in our population. There is not enough data on the incidence and prevalence of these tumors in Pakistan. There are very few local studies (1,6,13,14) that have analyzed this in the past. Most of the findings in this study were more or less consistent with the findings in the previous studies but the total data is far from being comprehensive.

Testicular biopsies are done in cases of all solid testicular masses and a vast majority of these turn out to be tumors. In this study, 122 consecutive orchidectomy specimens and testicular biopsy specimens sent to the Department of Pathology, King Edward Medical University, Lahore revealed tumors in 100 of these specimens, which is a high percentage (81.97%).

A vast preponderance of involvement of the right side in this process (88%) is one of the most striking findings of this study. A thorough search of recent literature could come up with only one similar reference to laterality of the testicular tumors and a higher frequency of right sided testicular involvement[11].

The etiological mechanisms behind this laterality may have to do with the fact that the right sided testis lies higher in the scrotal sac than the left and is therefore lesser amenable to temperature regulation by the dartos muscle[10,11]. Theories abound regarding the higher rate of mutation in the poorly temperature regulated testis[4,10,11]. Further studies are needed to determine the exact cause, however.

Eight cases had bilateral tumors, all in the seventh and eighth decade age group and all had a diagnosis of lymphoma. Non-Hodgkin’s lymphoma is known to present bilaterally[6].

The age range of patients included in the study spanned eight decades of life with the youngest patient being 8 months old and the oldest, 75 years.

Age analysis was done using two different methods in this study. When distributed in decades, there appear two age groups with a relative higher incidence of these tumors, 11 – 20 years and 31 – 40 years. In international studies on pediatric tumors, testicular tumors form a major percentage of the total but their incidence is quoted to be more shifted towards the second decade of life[15] which is in consistence findings in this study as shown by the first crest in the age distribution curve. Mushtaq et al. in an earlier study of testicular tumors in Northern Pakistan, however, report a shift of the first crest in age distribution curve even further to the right (30-39 years). (1) If the age distribution is analysed according to the developmental life stages, this becomes understandable as even in this study, the maximum number of cases fall in the adult age (35-64 years).

Seminomatous germ cell tumors constitute the single biggest group of diagnosis 56(56%) in the present series of cases followed mixed germ cell tumors 22 cases (22%). A previous study from Pakistan (1) showed the incidence of seminomas as 32% but most international studies quoted figures between 40% and 55%[9,16]. Incidence of lymphomas is a bit different with both previous local as well as

international studies as being the second largest group of testicular tumors[6,12] although there is a relative higher incidence of these tumors noted locally[1].

Non-seminomatous germ cell tumors collectively constitute 32% of all the cases (n=32) including yolk sac tumor (n=3), teratoma (n=7) and mixed germ cell tumors (n=22). This figure is significantly in contrast to an incidence of 40% reported by Mushtaq et al from the North of Pakistan. (1) Other local as well as international studies report a wide range, however (24-56%)[2,3,13,14].

One case of metastatic tumor diagnosed in the present series had features of prostatic adenocarcinoma which was in agreement with the clinical diagnosis of the primary.

Another interesting diagnosis among the 100 cases was that of a Rhabdomyosarcoma (2%), which is rather unusual, although sarcomas are known to occur in testi[13]. Mushtaq et al report an incidence of 7% of different sarcomas in their series[1].

CONCLUSION

Testicular tumors constitute a significant pathological condition with considerable morbidity and mortality. Pattern of histological types of testicular tumors is not much different from that reported internationally. It is mandatory to histologically subtype the testicular tumor as there are new treatment modalities for each tumor resulting in increased survival time of the patient. Surgery can be followed by radiotherapy and chemotherapy depending upon the type of tumor and its stage.

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