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Testicular tumors: A histopathological study of 50 cases

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Abstract

Background: Pattern of a disease is studied with the idea of getting information about the clinical presentation, the morphology and the causative factors. The testicular tumors constitute 4th most common cause of death from neoplasia in younger males. Though the etiology of testicular cancers is not well understood, various factors like cryptorchidism, trauma infections and genetics play role in the disease. The testicular tumors are histologically diverse.

Aim: Our study was undertaken to study the clinical presentation and morphological patterns of the testicular tumors. A total number of 50 cases of testicular tumors were studied. The majority of the cases i.e. 48 (96%) were of germ cell origin. Only 2 cases (4%) of testicular lymphoma were reported.

Materials and Methods: The study was carried out in two parts – retrospective (2005-2007) and prospective (2008-2010). During this period a total number of 50 cases of testicular tumors were diagnosed on small biopsies and orchidectomy specimens.

Results: The study work comprised of 50 cases of testicular tumors among which 44 (88%) cases were malignant and 6 (12%) were benign (Table 1). The majority of the testicular tumors i.e. 48 cases (96%) were of germ cell origin. Only 2 cases (4%) of testicular lymphoma were reported (Table 2). No case of sex cord stromal tumor, mixed germ cell sex cord tumor and metastatic tumor was reported.

Conclusion: Tumors of the testes present a great variety of histological types with many structural variations. The present study fairly provides an insight into the clinical presentations, prevalence and patterns of testicular tumors.

Keywords: Testicular tumors, Lymphoma, Seminomas, Germ cell tumor

Introduction

Testicles are very delicate part of male body that lie within scrotum suspended by spermatic cord(1). The testicular tumors constitute 4th most common cause of death from neoplasia in younger males. They are usually found in age groups 15-35 years which accounts for <1% of all malignancies in males(2). Incidence of this neoplasm in western countries has been rising(3). However, in India, incidence is low i.e. 15.92%.(4) Cryptorchidism is the most well established risk factor for testicular cancers(5). Testicular carcinoma follows a reverse pattern with increasing age. Significant advances in the understanding of diseases have taken place. Despite new techniques of imaging and tumor marker assays, histopathology remains the gold standard in diagnosis of testicular tumor.

The testicular tumors are histologically diverse. Thus, the current study was undertaken with the view to getting information about the prevalence, clinical presentation and morphological patterns of testicular tumors

Material and Methods

The study was carried out in two parts – retrospective (2005-2007) and prospective (2008-2010). During this period a total number of 50 cases of testicular tumors were diagnosed on small biopsies and orchidectomy specimens. In the retrospective study 27 cases of testicular tumors were diagnosed in the department of pathology Govt. Medical College, Jammu. In the prospective study 23 cases of testicular biopsies and orchidectomy specimens were studied at Dr. Vivek's diagnostic centre, Jammu. Thorough gross examination was carried out.

For the study into the patterns of testicular tumors, the paraffin sections of the biopsies were stained with H&E and special stains like PAS.

Results

The study work comprised of 50 cases of testicular tumors among which 44 (88%) cases were malignant and 6 (12%) were benign (Table 1). The majority of the testicular tumors i.e. 48 cases (96%) were of germ cell origin. Only 2 cases (4%) of testicular lymphoma were reported (Table 2). No case of sex cord stromal tumor, mixed germ cell sex cord tumor and metastatic tumor was reported. Among the seminoma classical variant comprised of 18 cases (36%). Spermatocytic seminoma – 2 cases (4%) and anaplastic seminoma – 4 cases 8%.

Among the non-seminomatous germ cell tumor, embryonal carcinoma comprised of 8 cases (16%), mature teratoma 6 cases (12%) and yolk sac tumor 2 cases (4%). 2 cases (4%) of mixed NSGCT and 6 cases (12%) of mixed seminoma and NSGCT were seen (Table 2).

Table 1: Number of cases

Total No. of cases	50
Malignant	44 (88%)
Benign	6 (12%)

Table 2: Histological type

Germ cell tumors 48 cases (96%)				Lymphoma 2 cases (4%)
Seminoma	**Non-seminomatous germ cell tumors**	**Mixed Non-seminomatous germ cell tumors**	**Seminoma and Non-seminomatous germ cell tumors**	
Classical 18 cases (36%)	Embryonal carcinoma 8 cases (16%)	2 cases (4%)	6 cases (12%)	
Spermatocytic 2 cases (4%)	Mature Teratoma 6 cases (12%)			
Anaplastic 4 cases (8%)	Yolk sac tumor 2 cases (4%)			

Seminoma: They constituted the maximum number of cases i.e. 24 (48%).

Classical seminoma was the most frequent variant 18 cases (36%). Their age range varied between 28-60 years. 5 cases of classical seminoma were associated with cryptorchid testis and in 1 case there was history of inguinal lymphadenopathy.

Anaplastic seminoma: 4 cases (8%) of anaplastic seminoma were observed. Their age range was 42-45 years. Their sizes ranged from 5-7 cm.

Spermatocytic Seminoma: 2 cases (4%) of spermatocytic seminoma were seen in 45 years and 50 years old patients. One case was associated with hydrocele. Tumor measured 4cm & 4.5cm respectively.

Non Seminomatous germ cell tumor (NSGCT): They formed the second largest group of germ cell tumors accounting for 16 cases (32%). The age range was between 17-32 years. History of pain and trauma was associated in 4 cases.

Embryonal carcinoma was the most frequent NSGCT i.e. 8 cases (16%). Size of tumor ranged from 4-10 cm. Age range was 30–40 years. Invasion of tunica albuginea was seen in one case. Two cases were associated with cryptorchid testis. Inguinal lymphadenopathy was present in one case.

Mature Teratoma: 6 cases (12%) of mature teratoma were observed in the age range of 25 & 30 years. Sizes of tumor ranged from 3.5 to 5.5 cm. No atypia, architectural complexity or invasion were seen in any of the cases.

Yolk sac tumor: 2 cases (4%) of yolk sac tumor were seen. One case in a 1year old infant and other in 3 years old child.

Mixed Non Seminomatous germ cell tumor (NSGCT): 2 cases (4%) of mixed NSGCT were seen in 20 years and 25 years old patients. Size of tumor was 3 cm and 3.5cm respectively. Microscopically, areas of teratoma and embryonal carcinoma were seen.

Mixed Seminoma and Non Seminomatous germ cell tumor: 6 cases (12%) of these were observed. The age range was 42 – 50 years. The size varied from 4 to 7 cm. Microscopically, variety of combinations were seen – seminoma with areas of embryonal carcinoma and seminoma with teratoma and combination of all three.

Testicular lymphoma: 2 cases (4%) of testicular lymphoma were seen in 50 years and 58 years old patients. Size was 2 cm and 3 cm respectively. Cut surfaces showed solid areas. Microscopically, the whole testis was replaced by a monomorphic infiltrate of small lymphocyte like cells.

History of pain and trauma were noted in 6 cases (12%) and 2 cases (4%) respectively. 3 cases (6%) were associated with hydrocele and 8 cases (16%) were associated with cryptorchid testes. One case (2%) was associated with inguinal lymphadenopathy. In the remaining cases, no particular clinical features was associated.

In our study the youngest patient was one year old infant while the oldest patient was 60 years old male.

Table 3: **Comparison of percentage of histological types of germ cell tumors**

Tumor type	Moghe K.V (6)	Karki S & Bhatta R R (7)	Mahesh B Patel (5)	Present study
Seminoma	41.6%	28%	40%	48%
Teratoma	36.4%	1%	33.33%	12%
Yolk sac	-	-	6.6%	4%

In the present study the percentage of seminomas is comparable to the study conducted by Moghe. K. V[6] and Mahesh B Patel[5]. The variation in the percentage of teratoma and yolk sac tumor could be due to small sample size.

Discussion

Incidence of testicular tumors varies from country to country and place to place thus pointing to various causative factors[8,9].

Various authors studied the incidence of benign and malignant tumors of testis. In the present study, the incidence of malignant tumors of the testis is 88% of the total testicular tumors studied and benign tumors is

12%. In the study conducted by Mahesh B. Patel et al[5], the incidence of malignant and benign tumors was 80% and 20% respectively which is more or less same.

The peak prevalence of testicular tumors in our study was seen in the age group of 31-50 years, the youngest patient was one year old infant. B. Hayes. Lattin et al[10] also found the peak prevalence to be in the 3rd and 4th decade. Gilliland and Key[11] also observed germ cell tumors in younger age groups.

In our study, malignant lymphoma of testis was seen in 50 and 60 years old patients. This is in accordance with study of Al. Abbadi et. al[12] who recorded testicular lymphomas in 5th 6th decade. Baldertorp et al[13] recorded testicular lymphoma in 60 – 80 years age group.

The clinical features observed in relation to the testicular tumors in our study were pain and trauma in 6 (12%) and 2 cases (4%) respectively. 3 cases (6%) were associated with hydrocele and 8 cases (16%) were associated with cryptorchid testis. One case (2%) was associated with inguinal lymphadenopathy. In study conducted by Gilliland and Key[11], pain and trauma were seen in 20% and 7% of cases respectively. Canedo Patzi et al[14], Cortes. D. et al[15] and Atia Zaka-ur-Rab et al[16] found association of testicular tumors with undescended testis in 14%, 9% and 7% of the cases respectively.

Seminoma comprised the largest group of tumors in our study i.e. 24 cases (48%) followed by non seminomatous germ cell tumors 16 cases (32%). There were 2 cases (4%) of mixed non seminomatous germ cell tumors and 6 cases (12%) of seminoma and non seminomatous germ cell tumors. Only 2 cases (4%) of testicular lymphoma were reported. The different histological variants of seminoma observed in present series are similar to observations of Gupta et. al[17] and Sharma et al.[18] Mahesh B. Patel et al[5] observed seminomas to be the most common pattern (40%) followed by non seminomatous germ cell tumors (20%) and lymphomas (14%).

The histological patterns of testicular tumors observed in the present study are in keeping with those described by known workers like Sharma et al[18], Lucia MS[19], Miller J[20], Yeole and Jussawala[4], Mahesh B. Patel. et al[5] and S. Kanto et al[21].

Conclusion

The present study fairly provides an insight into the clinical presentations, prevalence and patterns of testicular tumors.

1. The majority of the testicular tumors i.e. 48 cases (96%) were of germ cell origin. Only 2 cases (4%) of testicular lymphoma were reported (Table 2).
2. No case of sex cord stromal tumor, mixed germ cell sex cord tumor and metastatic tumor was reported.
3. Among the seminoma classical variant comprised of 18 cases (36%). Spermatocytic seminoma – 2 cases (4%) and anaplastic seminoma – 4 cases (8%).
4. Among the non-seminomatous germ cell tumor, embryonal carcinoma comprised of 8 cases (16%), mature teratoma 6 cases (12%) and yolk sac tumor 2 cases (4%). 2 cases (4%) of mixed NSGCT and 6 cases (12%) of mixed seminoma and NSGCT were seen (Table 2).

It is concluded that despite new techniques in imaging and tumor marker assay, the diagnosis of testicular tumors is dependent upon histopathological examination.

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