Research Article

Histopathological analysis of testicular tumors: a 4-year experience

Kunal S Deore, Mahesh B Patel, Ritesh P Gohil, Kirankumar N Delvadiya, Hansa M Goswami

Department of Pathology, BJ Medical College, Ahmedabad, Gujarat, India.
Correspondence to: Kunal S Deore, E-mail: kunalsdeore@gmail.com

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Abstract

Background: Testicular cancers are rare in most countries. However, in many Western countries their incidence has been increasing since the middle of the twentieth century. A definite geographic and racial distribution is seen in the occurrence of testicular tumors.

Objective: The purpose of this study was to analyze the pattern and distribution of testicular tumors in the patients visiting B.J. Medical College, Ahmedabad, Gujarat, India.

Materials and Methods: This was a retrospective study in which cases were retrieved between January 2011 and November 2014 from the electronic database of the Department of Pathology. Pertinent data such as age and histopathology of tumor were collected from the histopathology reports.

Results: Testicular tumors were uncommon, comprising only 8.21% (17/207 cases) of all testicular lesions. Most of these tumors (10; 58.8%) were seen between the third and the fifth decades. Germ cell tumors were the most common tumors (12; 70.6%), among which mixed germ cell tumors and seminomas were the most frequently encountered cases. 24.6% of the biopsies consisted of undescended testes and none of them showed malignancy. Other tumors diagnosed were mature teratoma, non-Hodgkin lymphoma, yolk sac tumors, intratubular germ cell neoplasia unclassified, and fibromatosis. One rare solitary case of ovarian tumor (papillary cystadenocarcinoma) was also encountered.

Conclusion: Testicular tumors are uncommon in our population. As evident in other parts of the world, germ cell tumor was the common tumor found in this study as well. However, unlike in Western population, no tumor was seen in undescended testis.

KEY WORDS: Mixed germ cell tumors, seminomas, mature teratoma, non-Hodgkin lymphoma, yolk sac tumors, intratubular germ cell neoplasia unclassified, fibromatosis

Introduction

Testicular cancers are rare in most parts of the world, with age-standardized incidence rate ranging from 1 per 100,000 in Asian and African/African American populations to 9.2 per 100,000 in Denmark.[1] Its incidence has been increasing since the middle of twentieth century in many Western countries with the potential exception of children ages 14 years or less, where little variation is observed.[2–7] Though the etiology of testicular cancers is not well understood, various factors such as cryptorchidism, trauma, infections, and genetic and endocrine factors appear to have a role in their development.[8] A definite geographic and racial distribution is seen in testicular tumors. The age distribution of testicular cancers is also distinct from other types of cancer.[2]

Objective: The purpose of this study was to analyze the pattern and distribution of testicular tumors in B.J. Medical College Ahmedabad, Gujarat, one of the tertiary health care institute in Northwest part of India.

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Materials and Methods

This was a retrospective study in which cases were retrieved from the electronic database of the department of pathology, B.J. Medical College, Ahmedabad for patients

visiting between January 2011 and November 2014. Pertinent data such as age and histopathology of tumors were collected from the histopathology reports and analyzed. Ten percent formalin was used as fixative for all specimens. Following findings were looked for during gross examination: right or left side, external surface, condition of the scrotal skin and tunica albuginea, consistency, size of tumor, appearance of cut surface, color, necrosis or hemorrhage, condition of surrounding testicular tissue, epididymis, and spermatic cord and surgical margin. Lymph nodes, whenever received, along with the specimen were scrutinized for evidence of metastasis. Grossly multiple representative tissue sections of 3–4 mm thickness varying from 2 to 10 sections from tumor, part of normal testicular tissue, epididymis, and spermatic cord (surgical margin) were taken. Tissue sections were embedded and processed. Microscopic study was carried out on sections of 3–5 mm thickness. Then, these sections were stained by hematoxylin and eosin. Special stains including immuno-histochemical markers were used as and when required. Histological features were studied in detail and correlated with other findings such as clinical, gross features, and tumor marker values mainly in germ cell tumors.[9]

Table 1: Different diagnosis made in the testicular biopsies

Cases	Numbers
Epididymo-orchitis	61
Tuberculous epididymo-orchitis	9
Torsion (infarction and gangrene)	52
Undescended testis	51
Miscellaneous (hernia, hydrocoele, and trauma)	11
Normal histology	6
Mixed germ cell tumors	5
Seminoma	4
Mature teratoma	2
Non–Hodgkin lymphoma	2
Yolk sac tumor	1
Intratubular germ cell neoplasia unclassified	1
Peritesticular fibromatosis	1
Papillary cystadenocarcinoma (ovarian type)	1
Total	207

Results

There were 207 testicular biopsies received in the Department of Pathology, B.J. Medical College, Ahmedabad, India, during January 2011 to November 2014. Ninety-eight percent of these testicular biopsies were of orchidectomy specimen and two percent were small biopsies; 24.6% biopsies consisted of undescended testes. Of the total, 8.21% (17/207) cases were diagnosed as testicular tumors, as shown in Table 1. Age-wise distribution of the patients along with diagnosis is shown in Table 2.

Discussion

Though the incidence of testicular tumors is low, it is one of the most common malignancies occurring in young adults. As described in the literature, testicular tumors were found to be rare in this study also. Undescended testes comprised 24.6% (51 cases) of the total testicular biopsies received; however, none of these cases showed malignancy. Most of the malignant cases were seen in the third and the fifth decades (10; 58.8%). Testicular tumors are limited to three age group: infancy, late adolescence to young adulthood (20–35 years), and 50 years and above.[10]

According to the literature, the histological pattern and behavior of the tumor differ with age. One case of benign cystic teratoma was reported in 2-month-old infant. In young adults, seminoma, embryonal carcinoma, teratoma, and teratocarcinoma are common but seminoma is more common in the fourth decade whereas spermatocytic seminoma and lymphoma occur in the elderly.

Out of the total 17 cases of tumors in this study, 70.6% (12 cases) consisted of germ cell tumors. According to Mostofi and Price[10], germ cell tumors constitute more than 94% of testicular tumors. Among the 12 cases of germ cell tumors in this study, 7 (58.33%) were mixed germ cell

Table 2: Histopathological diagnosis along with age distribution

	Diagnosis							
Age groups	Mixed GCT	Seminoma	Yolk sac tumor	NHL	Fibromatosis	IGCNU	Papillary cystadenocarcinoma	Total
0–10	1	–	–	–	–	–	–	–1
11–20	1	–	1	–	–	1	–	3
21–30	–	–	–	1	–	–	–	1
31–40	3	4	–	–	–	–	–	7
41–50	2	–	–	–	–	–	–	2
51–60	–	–	–	–	–	–	1	1
61–70	–	–	–	1	1	–	–	2
71–80	–	–	–	–	–	–	–	–
Total	7	4	1	2	1	1	1	17

GCT, germ cell tumor; NHL, non-Hodgkin lymphoma; IGCNU, intratubular germ cell neoplasia unclassified.

tumors, a finding that is similar to that seen in other studies. In this study, two cases of mixed germ cell tumor consisted of teratoma, one in a 2-month-old infant and the other in a 20-year-old young adult, whereas other five cases contained predominance of seminoma with embryonal carcinoma.

Seminoma comprised 35%–71% of testicular tumors. In this study, seminoma consisted of 24% (4 cases) of all testicular tumors. This variation in data may be due to the small number of cases included in this study. One solitary case of yolk sac tumor was found in a 20-year-old patient. One solitary case of intratubular germ cell neoplasia unclassified was seen in a 20-year-old patient.

Two cases (11.7 %) of non-Hodgkin lymphoma (NHL) were encountered. One low-grade NHL, lymphoblastic type, was seen in a 30-year-old patient and the other of diffuse large B cell type was seen in a 65-year-old patient. Fonseca et al.[11] reported median age of presentation of extranodal NHL to be 68 years. Primary testicular lymphoma accounts for approximately 1% of all lymphomas and is the most common testicular malignancy in men more than 60 years of age.[12]

NHL is the most common neoplasm presenting as metastasis to the testis, comprising approximately 1% of testicular tumors.[10] It may occur at any age, ranging from 21 to 87 years with most of the cases presenting in the sixth and seventh decades.

The reported incidence of leukemic infiltration of testis varies from 8%–25% in the literature, but in most studies this figure is less than 10%.[13–15] In this study, a 30-year-old patient presented with testicular involvement in acute lymphoblastic leukemia (ALL). The testis represents a potential sanctuary site for tumor cells, especially in ALL.[16] The incidence of testicular leukemia has increased with the improved survival of childhood ALL.[17]

One very rare case of ovarian tumor such as papillary cystadenocarcinoma was encountered in a 56-year-old patient.[18–22] According to the studies conducted by Axiotis[19,21] and Young[21], it originates from the remnants of müllerian ducts in testicular and paratesticular regions. One rare case of peritesticular fibromatosis (testicular fibrous pseudotumor) was seen in a 65-year-old patient.[23]

Conclusion

We conclude that testicular tumors are uncommon in our population. In our study, testicular tumors showed a varied histomorphology. Germ cell tumors formed the bulk of testicular tumors. Among the individual germ cell tumors, mixed Germ cell tumors were the most common followed by seminomas and NHLs. The age of patients with testicular tumors varied from 2 months to 65 years. Testicular tumors were the most common in third and fourth decades of life. However, unlike in the Western population, malignancy developing in the undescended testes was rare.

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