

Malignant tumors of testis in Ajmer region

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Abstract

Background: Testicular tumor is the most general solid tumor of young men but only accountable for about 1% of all cancers in men. The peak incidence is between 15 and 34 years age group. Testicular tumors are divided into two categories: germ cell tumors and nongerm cell tumors. Germ cell tumors consist of about 95% of all testicular tumors.

Objective: To study the burden, incidence, and morphological and clinicopathological correlation of testicular tumors in Ajmer, Rajasthan, India.

Materials and Methods: This retrospective and prospective 16-year study was performed in Department of Pathology, Jawaharlal Nehru Medical College, Ajmer, Rajasthan, India, from January 1999 to December 2014. The diagnosis was confirmed by histopathology with Hematoxylin and Eosin. Special stains and immunohistochemistry were done whenever needed.

Result: Of 115 cases of testicular tumors, the germ cell tumors [101 (87.82%) cases] were the commonest tumors. Highest incidence of testicular tumors was between 31 and 40 years age group (29.56%). Scrotal swelling was the commonest mode of presentation seen in 103 (89.56%) patients. Right-sided scrotal swelling [66 (57.39%) cases] was more common.

Conclusion: This study provides a description of the current trends in testicular tumors incidence and histopathological types.

KEY WORDS: Testicular tumors, germ cell tumors, scrotal swelling

Introduction

Tumors are the major pathological lesion in the testis. Testicular cancer is the most general solid tumor of young men but only accountable for about 1% of all cancers in men.^[1] The incidence has been increasing worldwide. The peak incidence is between 15 and 34 years age group.^[2] Testicular cancer follows a reverse pattern to most cancers, with decreasing incidence rates with increasing age.


Testicular tumors are divided into two categories: germ cell tumors and nongerm cell tumors derived from stroma and sex cord commonly known as sex cord–stromal tumors. Germ cell tumors consist of about 95% of all testicular tumors.^[3]

The origin of majority of the tumors is from germ cells, and more than half of the tumors may contain more than one tumor type. Although the exact causative factor of germ cell tumors is not known, the hypothesis is that the disease process starts in fetal life and consists of abnormal proliferation of primordial germ cells.^[4,5]

Risk factors for testicular cancer include cryptorchidism (testicular maldescent), carcinoma in situ (intratubular germ cell neoplasia), history of testicular cancer or extragonadal germ cell tumor, family history, HIV infection, Down syndrome, and testicular trauma.^[6]

The commonest presentation of testicular tumor is a nodule or painless swelling of one gonad. Other signs and symptoms are gynecomastia, undescended testis or cryptorchidism, epididymo-orchitis, hydrocele, dull ache or heavy

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sensation in the lower abdomen, anal area, or scrotum, and rarely infertility.^[7-10]

Right testicular tumors usually metastasize to nodes between the aorta and the inferior vena cava (interaortocaval nodes) and left testicular tumors to nodes lateral to the aorta (paraaortic).^[9]

The aim of this study was to assess the burden, incidence, and morphological and clinicopathological correlation of testicular tumors in Ajmer, Rajasthan, India.

Materials and Methods

Undertaking and permission was obtained from the principal and controller for conducting the study and collecting information. The retrospective and prospective 16-year study was carried out from January 1999 to December 2014.

This study deals with the clinicopathological study of 115 tumors of the testis.

For the retrospective study, tumors of the testis registered in histopathological registers in the department were taken. For the prospective study, orchietomy specimens of testis were received from JLN Hospital and Associated Group of Hospitals in Ajmer, Rajasthan, India.

Clinical details such as age, presenting signs and symptoms, caste, site—right, left, bilateral and unknown, and specimen, gross features such as size, shape, color, external appearance, consistency, appearance on cut section, and contents were noted.

Then, the tumors were cut according to “whole slice-multiple block method,” in which number of blocks made by each slice varied from 3 to 27. Proximal, medial, and distal parts of spermatic cord were taken in 3–4 mm in thickness; then tissue sections were allowed to fix in 10% buffered formalin.

The diagnosis was confirmed by histopathology with Hematoxylin and Eosin. Special stains and immunohistochemistry were done whenever needed.

The tumors were diagnosed and classified according to the 2004 WHO International Classification of testicular tumors.

The data compiled were analyzed for various parameters such as age, affected side, clinical signs and symptoms, and the incidence of the different histological types.

Result

This study was done for retrospective and prospective histopathological evaluation of 115 cases of testicular tumors.

In this study, the germ cell tumors [101 (87.82%) cases] were the commonest tumors followed by hematopoietic tumors and paratesticular and testicular adnexal tumors [six cases (5.21%)] each, and only two cases (1.74%) were of sex cord–stromal tumors [Tables 1 and 2].

The commonest tumor was germ cell tumors [101 (87.82%) cases], followed by six cases (5.22%) of NonHodgkin's lymphoma, five cases (4.34%) of mesenchymal tumors of testicular

adnexa, two cases (1.73%) of sex cord–stromal tumors, and one case (0.87%) of adenomatoid tumor [Tables 1 and 2].

Maximum incidence of testicular tumors was between 31 and 40 years age group (29.56%). Patients aged younger than 10 years included eight cases. The youngest patient was of 1 year of age, and the oldest was aged 85 years with tumor [Table 3].

The commonest clinical symptom was scrotal swelling found only in 62 (53.91%) cases, followed by pain with scrotal swelling in 25 (21.74%), scrotal swelling with hydrocele in 16 (13.9%), undescended testis seen in seven (6.08%), and trauma seen in five (4.35%) with tumor [Table 4].

Right-sided scrotal swelling [66 (57.39%) cases] was a more common tumor [Table 5].

Seminomas were the commonest tumors in this study, which showed sheets of uniform tumor cells divided by delicate fibrous septa infiltrated by lymphocytes. The tumor cells were large, uniform, round to polygonal, distinct cell membrane, and lightly eosinophilic to clear cytoplasm. The nuclei contain centrally located nucleoli. Cytoplasm of tumor cells were PAS positive.

Teratocarcinoma show large tumor cells with vesicular nuclei, amphophilic cytoplasm, prominent nucleoli with calcification, and neural tissue.

Mature teratoma show lining of cuboidal epithelium and nests of squamous cells, and spindle-shaped mesenchymal cells in stroma with foci of cartilage are seen.

Leydig cell tumor shows tumor cells arranged in diffuse, sheet-like pattern, small nests, ribbons, and cords. Cells are large round to polygonal containing abundant granular eosinophilic cytoplasm with central round nuclei and central nucleolus.

NonHodgkin's lymphoma shows monotonous population of tumor cells. Tumor cells were large with vesicular nuclei containing a single centrally located prominent nucleolus; cytoplasm was scanty to moderate. Scattered small lymphocytes were also present. Few cells showed mitosis. Immunohistochemistry study showed cytoplasmic leucocyte common antigen positivity.

Rhabdomyosarcoma shows tumor traversed by a network of fibrous septa that divide the cells into clusters or aggregates. Central cells become necrotic and drop out a crude resemblance to pulmonary alveoli. Tumor cells were discohesive and moderate in size with scant cytoplasm.

Discussion

Of 115 cases of testicular tumors, the germ cell tumors [101 (87.82%) cases] were the commonest tumors. Highest incidence of testicular tumors was between 31 and 40 years age group (29.56%). Scrotal swelling was the commonest mode of presentation seen in 103 (89.56%) patients. Right-sided scrotal swelling [66 (57.39%) cases] was more common.

In this study, commonest testicular tumors were found to be germ cell tumors [101 (87.8%) cases]. These findings are

Table 1: Histological types of germ cell tumors of testis

S. no.	Type of testicular tumor	No. of cases	%	Overall %
I	Germ cell tumors	101	100	87.82
A	Tumors of one histological type	78	77.23	67.83
1.	Seminoma	45	44.55	39.13
2.	Spermatocytic seminoma	2	1.98	1.73
3.	Embryonal cell carcinoma	16	15.84	13.91
4.	Yolk-sac tumor	6	5.94	5.22
5.	Teratoma	9	8.91	7.82
a.	Mature	6	5.94	5.22
b.	Immature	2	1.98	1.73
c.	With malignant transformation	1	0.99	0.87
B.	Tumors of more than one histologic type	23	22.77	20
1.	Embryonal carcinoma and teratoma (Teratocarcinoma)	14	13.86	12.17
2.	Embryonal carcinoma and seminoma	5	4.95	4.34
3.	Teratoma and seminoma	4	3.96	3.47

Table 2: Histological types of nongerm cell tumors of testis and tumors of testicular adnexa

S. no.	Type of testicular tumor	No. of cases	%	Overall %
I	Sex cord /stromal tumor	2	100	1.73
1.	Leydig cell tumor	2	100	1.73
II.	Hematopoietic tumor	6	100	5.22
1.	NonHodgkin's Lymphoma	6	100	5.22
III.	Tumors of paratesticular structures	1	100	0.87
1.	Adenomatoid tumor	1	100	0.87
IV.	Mesenchymal tumors of testicular adnexa	5	100	4.34
1.	Rhabdomyosarcoma	3	60	2.60
2.	Leiomyoma	1	20	0.87
3.	Myxoid liposarcoma	1	20	0.87

Table 3: Age incidence of testicular tumors

Age group in years	No. of cases	Percentage
0–10	8	6.95
11–20	14	12.17
21–30	27	23.47
31–40	34	29.56
41–50	14	12.17
51–60	10	8.69
61–70	4	3.47
71–80	2	2.60
81–90	2	2.60
Total	115	100

$p = 0.001$ (S).

Table 4: Clinical features of testicular tumors

Clinical feature	No. of cases	Percentage
Swelling scrotum only	62	53.91
Swelling scrotum with pain	25	21.74
Swelling scrotum with hydrocele	16	13.90
Undescended testis	07	6.08
Trauma	05	4.35

$p = 0.008$ (S).

Table 5: Laterality of scrotal swelling in this study

Side affected	No. of cases	Percentage
Right	66	57.39
Left	48	41.74
Unknown	1	0.87

$p = 0.0001$ (S).

concordant with findings of other authors such as Gill *et al.*^[11] and Chandanwale *et al.*^[12] Small differences in incidence of germ cell tumors in various studies may be owing to different sample sizes. Majority of testicular tumors [34 (29.5%) cases] was observed in 31–40 years age group (fourth decade), similar to the findings of Naqvi *et al.*^[13] and Salako *et al.*^[14] Among 115 testicular tumors, 114 (99%) cases showed unilateral involvement. Right side was involved in 66 (57.3%) cases, and left side was involved in 48 (41.7%) cases. These findings were comparable to findings of Patel *et al.*^[15] and Chandanwale *et al.*^[12] Scrotal swelling was the commonest mode of presentation seen in 103 (89.56%) patients. Tan *et al.*^[16] found testicular swelling in 100% of cases. Undescended testis was seen in seven cases (6.08%)—four seminoma and three embryonal carcinoma. The incidence of undescended testis was 6.08%, which was comparable to study by Woodward.^[17] In this study, germ cell tumors were the commonest testicular tumors. Of 101 germ cell tumors, 78 (77.23%) tumors were of one histological type, and 23 (22.77%) tumors were of more than one histological type comparable to the findings of Naqvi *et al.*^[13] and Chandanwale *et al.*^[12] Commonest testicular tumors were found to be seminoma (39.13%), followed by embryonal cell carcinoma (13.91%) and teratocarcinoma (12.17%). Teratoma and mixed tumors were found to occur in 7.82% of cases each. Similar observations were made by Naqvi *et al.*^[13] and Chandanwale *et al.*^[12] The incidence of seminoma in this study was comparable to the studies done by Naqvi *et al.*^[13] and Chandanwale *et al.*^[12] Deore *et al.*^[18] observed lower incidence than this study. Incidence of embryonal cell carcinoma in this study was 13.9%, a similar observation made by Chandanwale *et al.*^[12] while Naqvi *et al.*^[13] showed a higher incidence than this study. Incidence of teratoma in this study was 7.8%, a similar observation made by Naqvi *et al.*^[13] while Chandanwale *et al.*^[12] showed a higher incidence than this study. Teratocarcinoma encountered 12.1% incidence in this study, which is comparable to the studies done by Naqvi *et al.*^[13] and Karki and Bhatta.^[19] Yolk sac tumor accounted for 5.22% of this study, which was comparable to the figures 5.8% and 6.8% given by Deore *et al.*^[18] and Naqvi *et al.*^[13] Most of the cases were seen in first decade. The incidence of other mixed germ cell tumors, that is, embryonal carcinoma and seminoma and Teratoma and seminoma was 4.3% and 3.4%, respectively which is comparable to the study done by Naqvi *et al.*^[13] while higher incidence was observed by Chandanwale *et al.*^[12] The incidence of nonHodgkin's lymphoma in this study was 5.22%. Similar incidence was reported by

Chandanwale *et al.*^[12] and higher incidences of 13.3% and 11.7% were observed by Patel *et al.*^[15] and Deore *et al.*^[18] respectively.

The major strength of this study was its large size, which enabled us to perform statistical analyses of substantial numbers of testicular tumors and despite new techniques in imaging and tumor marker assay, the diagnosis of testicular lesion is primarily dependent upon histopathological examination.

The study limitations include its retrospective nature in larger part and it does not include serum level of tumor markers and molecular genetics.

Conclusion

It is concluded from this study that, on morphological grounds, tumors originating from germ cell are the commonest type. Majority of the testicular tumors observed in this study are seminoma (39.13%). This study provides a description of the current trends in testicular tumors incidence and histopathological types. It is therefore suggested that efforts must be made to identify the risk factors for malignancy. The histopathological type of testicular tumor correlated with the prognosis of the tumors.

References

- Office for National Statistics. *Cancer Statistics Registrations: Registrations of Cancer Diagnosed in 2002 England. Series MB1 no.33*. London: Office for National Statistics, 2005.
- Epstein JI. The lower urinary tract and male genital system. In: *Robbins and Cotran Pathologic Basis of Disease*, 7th edn, Kumar V, Abbas AK, Fausto N (Eds.), Philadelphia: Elsevier Saunders; 2005; pp. 1037–44.
- Bosl GJ, Motzer RJ. Testicular germ-cell cancer. *N Engl J Med* 1997;337:242.
- Bray F, Richiardi L, Ekbom A, Pukkala E, Cuninkova M, Moller H. Trends in testicular cancer incidence and mortality in 22 European countries: continuing increase in incidence and declines in mortality. *Int J Cancer* 2006;118(12):3099–111.
- McGlynn KA, Devesa SS, Graubard BI, Castle PE. Increasing incidence of testicular germ cell tumours among black men in the United States. *J Clin Oncol* 2005; 23:575–61.
- Garner MJ, Turner MC, Ghadirian P, Krewski D. Epidemiology of testicular cancer: an overview. *Int J Cancer* 2005;116(3): 331–9.
- Sabiston DC. *Sabiston TextBook of Surgery: The Biological Basis of Modern Surgical Practice*, 18th edn., volume 2. Philadelphia: Elsevier Saunders, 2007. pp. 2280–85.
- Wein AJ. Neoplasm of testis. In: *Cambell–Walsh Urology*, 9th edn. Philadelphia: Elsevier Saunders, 2007. pp. 893–958.
- Tanagho EA, McAninch JW (Eds.). Genital tumours. In: *Smith's General Urology*, 17th edn. Newyork: Tata McGraw-Hill Education, 2007. pp. 375–87.
- Bailey, Love. *Tumours of Testis*, 25th edn. London: Taylor and Francis Ltd. pp.1384–87.
- Gill MS, Shah SH, Soomro IN, Kayani N, Hasan SH. Morphological pattern of testicular tumors. *J Pakistan Med Assoc* 2000;50(4):110–3.

12. Chandanwale S, Chawla R, Buch A, Dharwadkar A, Gore C, Rajpal M. Pathology of testicular tumors—review of 50 cases. *Int J Pharm Biomed Sci* 2012;3(4):167–76.
13. Naqvi SQH, Ansari AL, Memon NA, Memon JM, Akhund AA. Correlation of age with histopathological type of testicular tumors. *Gomal J Med Sci* 2006;4(1):24–7.
14. Salako AA, Onakpoya UU, Osasan SA, Omoniyi-Esan GO. Testicular and para-testicular tumors in south western Nigeria. *Afr Health Sci* 2010;10(1):14–7.
15. Patel MB, Goswami HM, Parikh UR, Mehta N. Histo-pathological study of testicular lesions. *Gujrat Med J* 2015;70(1):41–6.
16. Tan GH, Arzif M, Shamsul AS, Ho CC, Praveen S, Goh EH, et al. Clinicopathological features and survival of testicular tumours in a Southeast Asian university hospital: a ten-year review. *Asian Pac J Cancer Prev* 2011;12(10):2727–30.
17. Woodward PJ. Case 70: seminoma in an undescended testis. *Radiology* 2004;231:388–392.
18. Deore KS, Patel MB, Gohil RP, Delvadiya KN, Goswami HM. Histopathological analysis of testicular tumors: a 4-year experience. *Int J Med Sci Public Health* 2015;4(4):554–7.
19. Karki S, Bhatta RR. Histopathological analysis of testicular tumors. *J Pathol Nepal* 2012;2(4):301–4.

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