



Histopathological Profile of Testicular Lesions at a Tertiary Care Centre

Dr. Suwarna B Patil¹, Dr. Swarada V Kangate², Dr. Manjiri G Khade³, Dr. Pradeep S Umap⁴, Dr. Pradeep Rudra⁵, Dr. Shyamkant C Patharwat⁶, Dr. Deji M Talekar⁷

¹Associate Professor, ²Assistant Professor, ³Assistant Professor, ⁴Professor and Head, ^{5,6,7}Junior Resident

Department of Pathology,
Government Medical College, Akola, Maharashtra, India

Abstract: Background: Testis is affected by both non-neoplastic and neoplastic conditions. ¹Torsion of testis is a surgical emergency, commonly seen in 10-25 years of age. The testicular tumors although relatively rare, are of great interest and importance because of their varied histological appearances. **Objectives:** This study was carried out with aim to study age wise distribution of various non-neoplastic and neoplastic testicular lesions with histopathological spectrum and incidence of testicular lesions.

Material and methods: The present study was a retrospective cross-sectional study, carried out at Tertiary Care Teaching Hospital, Akola, Vidarbha, Maharashtra, India. This study was carried in Department of Pathology, over a period of five years from January 2015 to December 2019. Among 14306 histopathological specimens received, total 87 cases were found to be of testicular lesions. Histopathological processing of sections was done and slides stained with Haematoxylin and Eosin (H&E) were studied. Where ever indicated special stains were studied. **Results:** Most commonly affected age group diagnosed with testicular lesions in present study was 21-30 years and presented with testicular swelling in 83 cases (95.40%). Among 47 non-neoplastic lesions, torsion and atrophic testis (12 cases each) were outnumbered. Out of 40 neoplastic testicular lesions, Mature teratoma was in 15% (six cases). While seminoma outnumbered with eight cases (20%) in malignancy and immature teratoma was least common (one case).

Conclusion: Clinical data, operative findings and gross features of lesions along with histopathological examination proved important and at times decisive diagnostic clues.

Keywords: Histopathology, Orchitis, Seminoma, Teratoma, Testis, Torsion.

INTRODUCTION:

Testis is a very delicate, paired oval organ of human male body that lies within scrotum suspended by spermatic cord.¹ There are various testicular lesions, ranging from paediatric to adult age groups. They usually present with scrotal swelling, pain and mass. Testis is affected by both non-neoplastic and neoplastic conditions. Non neoplastic testicular lesions include cryptorchid (undescended) testis, testicular torsion, testicular atrophy, epidermoid cysts, pyocoele, infections of testis like acute, chronic granulomatous, tuberculosis, malakoplakia and vasculitis.² Undescended testes is the commonest genital malformation of the boys³ and is found in approximately 1% of one-year-old boys.⁴ An undescended testis is more likely to develop a germ cell tumour than a normally placed testis. Atrophy of testis may result from cryptorchidism, the orchitis of mumps, liver cirrhosis, oestrogen administration, radiation exposure, chemotherapy, AIDS and exposure to environmental toxins.¹ Torsion of testis is a surgical emergency, commonly seen in 10-25 years of age.⁵ Nonspecific epididymo-orchitis is commonly related to infections in the urinary tract and its cause varies with age. It may progress to frank abscess formation.⁶ Tubercular epididymo-orchitis is a common form of genitourinary tuberculosis. It may coexist with pulmonary tuberculosis or tuberculosis of other parts of lower genitourinary system.

The testicular tumors although relatively rare, are of great interest and importance because of their varied histological appearances and the diverse or even conflicting views held regarding their histogenesis⁷. They account for less than 1% of all malignancies in male; constitute the 4th most common cause of death from neoplasia in a younger male, usually found in age group 15-35 years⁸. The aetiology of testicular cancer is not well understood, various factors such as cryptorchidism, trauma, infections and genetic and endocrine factors appear to have a role in their development. In 2016, WHO has classified testicular and paratesticular neoplasms into various subgroups as Germ cell tumors (GCT) derived from germ cell neoplasia in situ, GCTs unrelated to germ cell neoplasia in situ, Sex cord stromal tumors (SCST), tumor containing both germ cell and sex cord stromal elements, miscellaneous tumors of

the testis, hemato-lymphoid tumors, tumors of collecting duct and rete testis, tumors of paratesticular structures, mesenchymal tumors of the spermatic cord and testicular adnexa and metastatic tumors.⁹

Treatment of testicular lesions includes operative procedures like orchidectomy, retroperitoneal lymph node dissection, radiation therapy and chemotherapy have tremendous influence on management of all testicular lesions. This study was carried out with aim to study

- 1) Age wise distribution of various non-neoplastic and neoplastic testicular lesions
- 2) Histopathological spectrum and incidence of testicular lesions

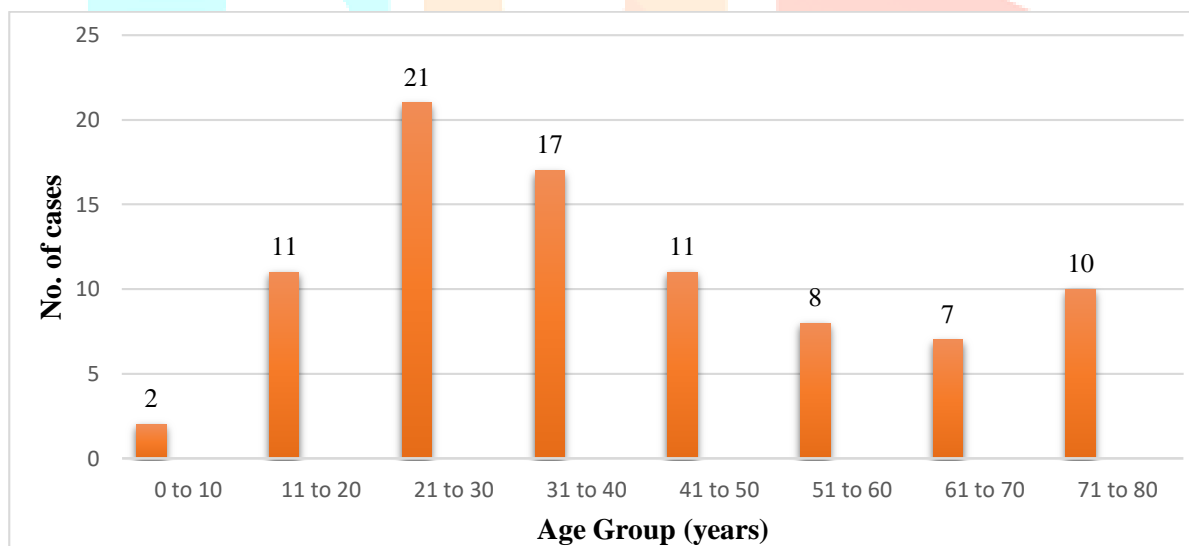
MATERIAL AND METHODS:

The present study was a retrospective cross-sectional study, carried out at Tertiary Care Teaching Hospital, Akola, Vidarbha, Maharashtra, India. This study was carried in Department of Pathology, over a period of five years from January 2015 to December 2019. Among 14306 histopathological specimens received, total 87 cases were found to be of testicular lesions. All radical orchidectomy specimens along with their operative findings were received from Department of Surgery. Clinical history with age, presenting signs & symptoms, radiological findings and possible serum marker assays were studied. Gross examination of 10% formalin fixed specimen was done and multiple sections were taken from representative sites. Further histopathological processing of sections was done and slides stained with Haematoxylin and Eosin (H&E) were studied. Where ever indicated special stains like Periodic Acid Schiff (PAS) and Masson's Trichrome were studied. Zeihl- Nelson (ZN) stain was done for Acid Fast Bacilli (AFB) in all cases of suspected tuberculous orchitis.

RESULTS:

Most commonly affected age group diagnosed with testicular lesions in present study was 21-30 years, 21 cases (24.13%), followed by 31-40 years, 17 cases (19.54%). Minimum number of cases were found in the age group of 0-10 years, 2 cases (2.29%) of Yolk Sac Tumors. (Figure 1)

Figure 1: Age wise distribution of testicular lesions (n=87)



Most common mode of presentation of testicular lesions was found to be testicular swelling in 83 cases (95.40%) followed by testicular pain and fever in 19 cases (21.83%) each. Whereas lower abdominal pain was least common presentation in 16 cases (18.39%). (Table 1)

Table 1: Mode of presentation of testicular lesions

Mode of presentation	No. of cases	Percentage (%)
Testicular swelling	83	95.40
Testicular pain	19	21.83
Lower abdominal pain	16	18.39
Fever	19	21.83
Weight loss	31	35.63

This study consists of 87 cases among which 47 cases were non-neoplastic and 40 cases were neoplastic lesions.

In the present study, among non-neoplastic lesions, out of 47 cases only one case of testicular atrophy was bilateral while 46 cases were unilateral. Whereas, out of 40 cases of neoplastic lesions, 39 cases were unilateral and only one case of lymphoma of testis was bilateral. Right side was commonly affected than left side. (Table 2)

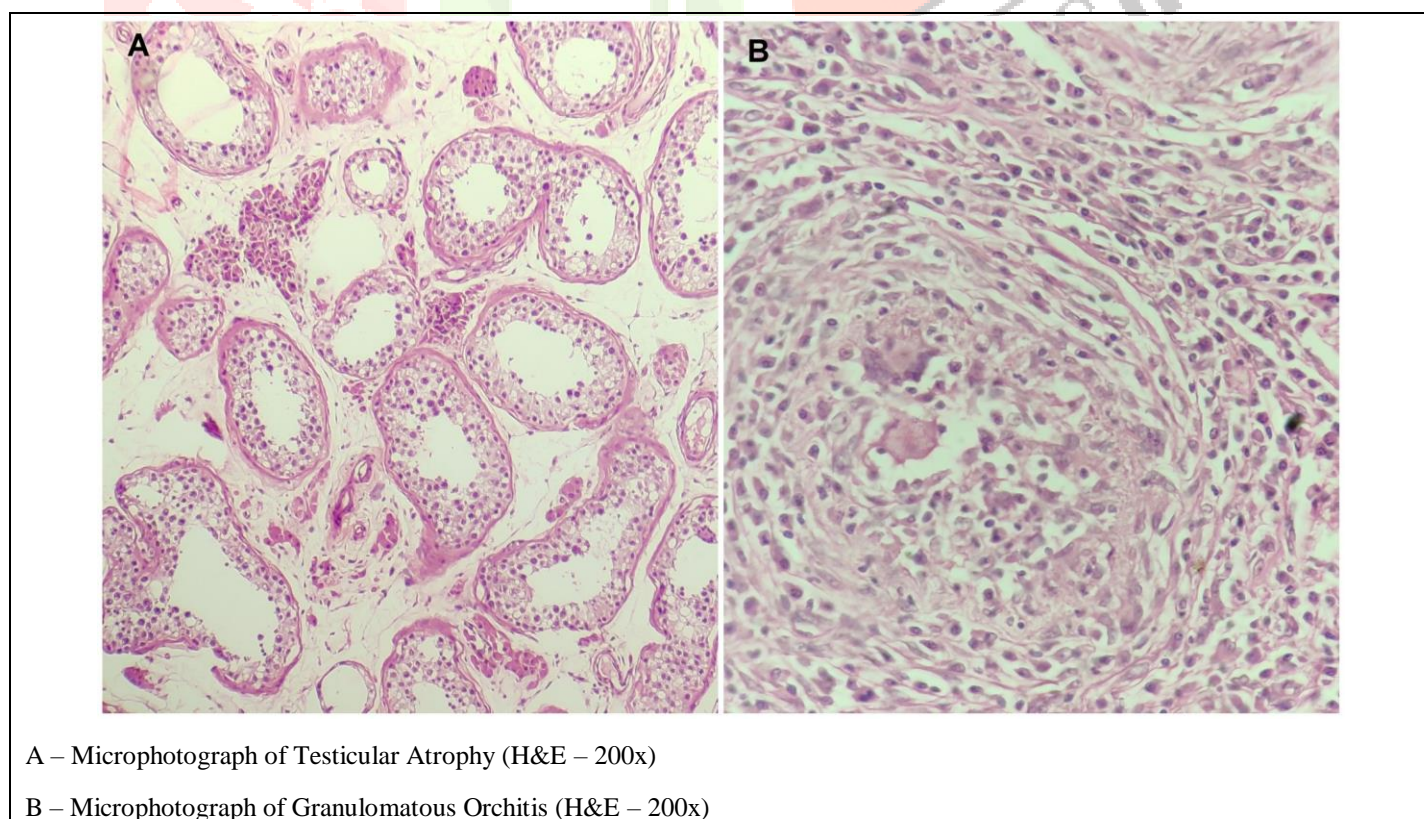
Table2: Laterality of testicular lesions (n=87)

Laterality	Side	Non neoplastic lesions		Neoplastic lesions	
		No. of cases	Percentage	No. of cases	Percentage
Unilateral	Right	26	55.31	28	70.00
	Left	20	42.55	11	27.50
Bilateral		01	2.12	01	2.50
Total		47	100	40	100

Table 3 shows, among 47 non-neoplastic lesions, torsion and atrophic testis (12 cases each) were outnumbered. While this was followed by eight tuberculous orchitis and six granulomatous orchitis. (Figure 2)

Table 3: Histopathological diagnosis of non-neoplastic testicular lesions (n=47)

Histopathological diagnosis	No .of cases	Percentage (%)
Inflammation and infection		
1) Specific		
a) Tuberculous orchitis	08	17.02
b) Granulomatous orchitis	06	12.76
2) Non-specific		
a) Pyocele	05	10.63
b) Chronic orchitis	04	8.51
Vascular – Torsion	12	25.53
Other – Atrophy	12	25.53
Total	47	100

Figure 2: Microphotographs showing Non-neoplastic Testicular Lesions

Out of 40 neoplastic testicular lesions, nine were benign and 31 were diagnosed as malignant lesions. Mature teratoma was most common in 15% (six cases). While seminoma outnumbered with eight cases (20%) in malignancy, and immature teratoma was least common (one case). (Table 4) (Figure 3)

Table 4: Histopathological diagnosis of neoplastic testicular lesions (n=40)

Histopathological diagnosis	No .of cases	Percentage (%)
Benign		
1) Mature teratoma	06	15
2) Sex-cord Stromal tumours		
a) Leydig cell tumour	01	2.5
b) Sertoli cell tumour	01	2.5
c) Mixed	01	2.5
Malignant		
1) GCT (Germ Cell Tumour)		
a) SGCT (Seminoma)	08	20
b) NSGCT (Non-seminomatous)		
i. Yolk sac Tumour	02	05
ii. Immature teratoma	01	2.5
iii. MGCT (Mixed)		
Teratocarcinoma	06	15
Teratocarcinoma + YST	05	12.5
SGCT + YST	02	05
SGCT + YST + Embryonal	02	05
2) Non-Hodgkin's Lymphoma	05	12.5
Total	40	100

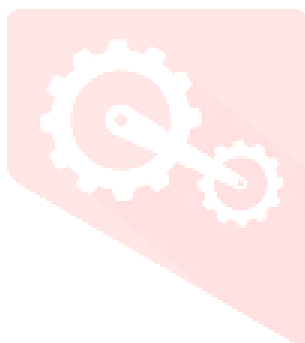
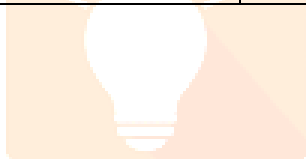
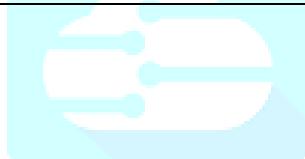
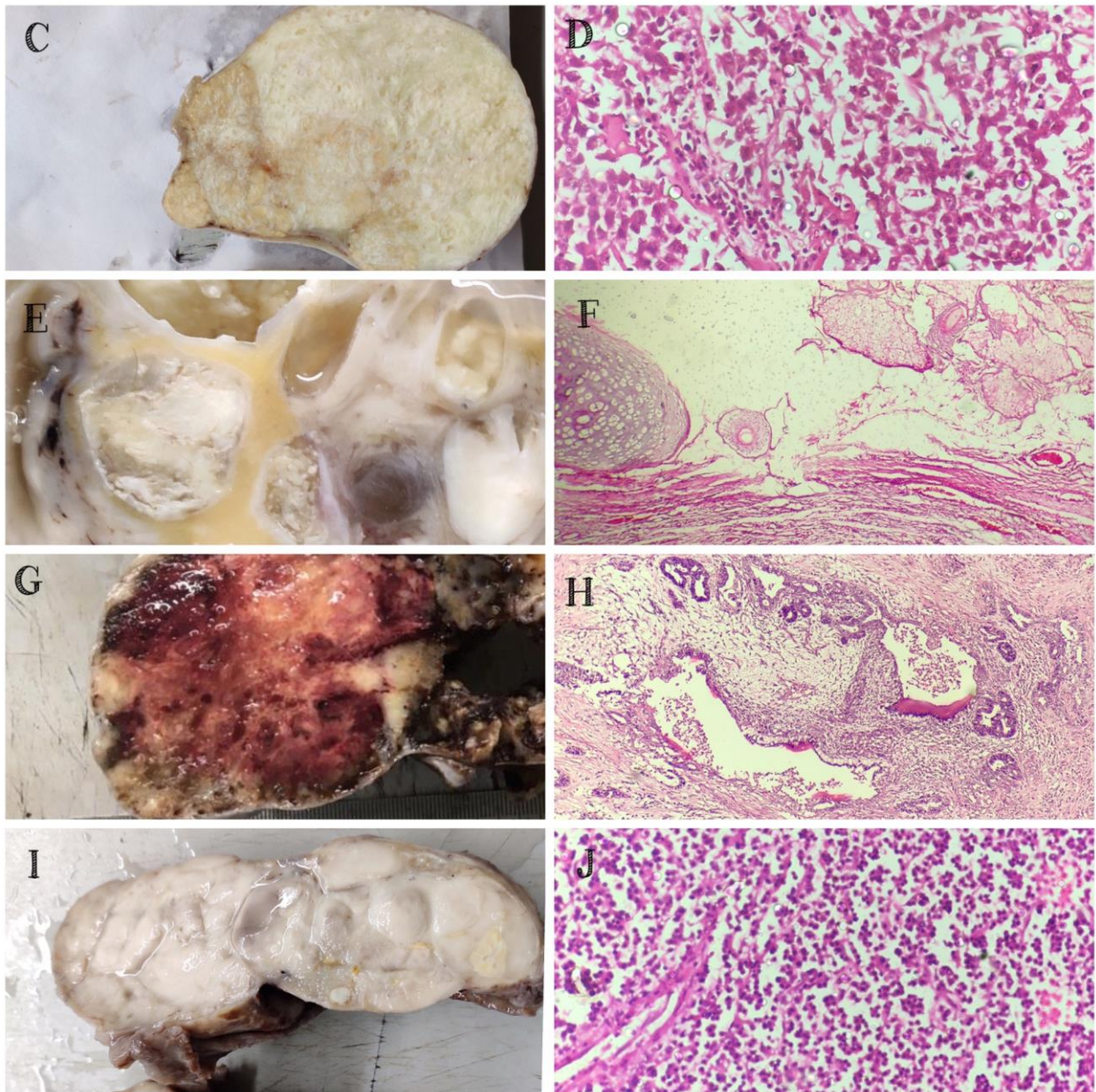


Figure 3: Neoplastic Testicular lesions

C – Clinical photograph of Seminoma of Testis

D – Microphotograph of Seminoma of Testis (H&E – 400x)

E – Clinical photograph of Mature Teratoma of Testis

F – Microphotograph of Mature Teratoma of Testis (H&E – 200x)

G - Clinical photograph of Malignant Mixed Germ Cell Tumour of Testis

H – Microphotograph of Malignant Mixed Germ Cell Tumour of Testis (H&E – 200x)

I - Clinical photograph of Non-Hodgkin's Lymphoma of Testis

J – Microphotograph of Non-Hodgkin's Lymphoma of Testis (H&E – 400x)

DISCUSSION:

Testicular lesions are rare entity in Indian populations.

In our study among 14306, total 87 testicular lesions were recorded comprising 0.60% incidence per year. For testicular neoplasms average number per year is eight. Our findings were comparable to study done by Deotra A et al¹⁰ and Chakrabarti PR et al¹¹. However, in Western countries like England and France average number of testicular neoplasms per year are more (Horwich A et al¹² and Walschaerts M et al¹³) this may be due to genetic factors, cryptorchidism, estrogen rich diet and industrialisation.

We found non-neoplastic lesions more compared to neoplastic. Among non-neoplastic lesions cases of torsion testis and atrophy outnumbered, these findings were matching with the studies done by Patel MB⁵ and Reddy H². However, study done by Manasi Sharma¹⁴ cases of undescended testis were more common. We found more malignant neoplasms compared to benign neoplasms. Among malignancy GCT were more common, in that also tumour showing histology of seminoma was commonest. Similar results were seen in study done by Deore KS¹⁵.

We found various combinations of malignant mixed GCT like Yolk Sac Tumors (YST)+ Teratoma, Seminoma+ YST, seminoma +YST+ Embryonal, Teratocarcinoma +YST. These were seen in 15 neoplastic testicular lesions (37.5%), which was comparable to studies done by Deore KS¹⁵, Chakrabarti PR¹¹ and Sanjay M¹⁶. Among malignant lesions Non-Hodgkin's Lymphoma was least common comprising 12.5%. Similar incidence was found in study done by Chakrabarti PR¹¹.

In present study, peak age incidence was 21-30 years age group which was comparable to Chakrabarti PR et al¹¹. While Mansi Sharma¹⁴ and Patel MB⁵ found 11-20 years age group to be most common. Testicular lesions were more common on right side accounting for 62.06% which was similar to other studies^{5,10,11,14}.

Testicular swelling was the most common feature in 95.40%, irrespective of histological types which was in accordance with other studies in literature^{5,10,11,14}. Thus, we can conclude that, majority of testicular lesions are non-neoplastic. Neoplastic lesions though rare, clinically the diagnosis is delayed in many cases, due to their benign nature. Malignant GCT have rapid onset and present in young age. Lymphomas present in old age. Despite new techniques in imaging and tumour marker assays, the diagnosis of testicular lesions is primarily dependent upon histopathological examination. Clinical data, operative findings and gross features of lesions along with histopathological examination proved important and at times decisive diagnostic clues. The Urologists, the Radiologists and Chemotherapists are eventually dependent upon histological diagnosis of tumour and tumour like lesions as histopathological features have major stake in determining the prognosis and therapeutic option.

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