ISSN (P) : 2589-9120 / (O) : 2589-9139
PubMed-National Library of Medicine - ID: 101773527

*International Journal of Medical Science and Applied Research (IJMSAR)*

*Available Online at: https://www.ijmsar.com*

*Volume – 6, Issue – 5, September – 2023, Page No. : 19 – 26*

# Histopathological Study of Testicular Lesions

**[1]Dr. Rajharsh Hanmante, [2]Dr. Aditi Agrwal, [3]Dr. Suresh Chaware, [4]Dr. Umesh Kanade**

[1]Associate Professor, Dept. of Pathology, VDGMC Latur, Maharashtra, India

[2]Senior Resident, Dept. of Pathology, VDGMC Latur, Maharashtra, India

[3]Associate Professor, Dept. of Pathology, VDGMC Latur, Maharashtra, India

[4]Professor & Head, Dept. of Pathology, VDGMC Latur, Maharashtra, India

**Citation of this Article:** Dr. Rajharsh Hanmante, Dr. Aditi Agrwal, Dr. Suresh Chaware, Dr. Umesh Kanade, "Histopathological Study of Testicular Lesions.'' IJMSAR – September – 2023, Vol. – 6, Issue - 5, Page No. 19-26.



**Corresponding Author:** Dr. Suresh Chaware, Associate Professor, Dept. of Pathology, VDGMC Latur (MH)

**Type of Publication**: Original Research Article

**Conflicts of Interest:** Nil

## ABSTRACT

Testis is a male gonad and an unique and important organ of male reproductive system. There are various testicular lesions, ranging from inflammatory to malignant lesions. Usually they present as scrotal swelling, pain and mass per abdomen. Incidence of testicular tumours is very low but still it constitutes to be one of the most common malignancies occurring in young adult. Testicular cancers comprise of 1% of all the male cancers worldwide. Seminoma is the most common testicular germ cell tumor. Cryptorchidism, Infertility and prior history of Germ cell tumor in contralateral testis are the common risk factors of testicular tumor. Surgical removal of testis is also known as orchidectomy. Indication for orchidectomy can include both neoplastic and non-neoplastic conditions of testis. Various investigations have come up for the diagnosis of testicular lesions such as Ultrasound, CT scan, X-rays, Intravenous urography, Tumor marker assay as well as histopathological examination. But diagnosis of testicular lesion is primarily dependent upon histopathological examination. The urologists, the radiologists and chemotherapists are dependent upon the histological diagnosis of tumor and tumor like lesions of testis. present descriptive observational study was carried out in our tertiary care centre with the objective to assess various histopathological features of testicular lesions and thus offering a specific diagnosis which is of paramount clinical significance.

**Keywords**

Testis, Tumor, Seminoma, Germ cell tumor, Cryptorchidism, Orchidectomy, Histopathology

## INTRODUCTION

Testis is a male gonad. It is homologous with the

ovary in female genital system and is an unique and important organ of male reproductive system.[1] The testes or male gonads, are paired organs lying in the scrotal sac and are responsible for the production of male gametes, spermatozoa, and secretion of male sex hormones, principally testestorone.[2]

There are various testicular lesions, ranging from pediatric to adult age groups. Usually they present as scrotal swelling, pain in scrotum, and mass per abdomen.[3] Testicular lesions are categorized under non neoplastic and neoplastic lesions. Non-neoplastic lesions of testes include inflammatory lesions like acute and chronic Epididymoorchitis, vascular lesions like torsion of testis, atrophy with maturation arrest of spermatogenesis, epidermoid cysts, infections like tuberculosis of testes, malakoplakia, abscess and vasculitis.[3,4]

Incidence of testicular tumours is very low but still it constitutes to be one of the most common malignancies occurring in young adult.[5] The incidence of these tumors in United States is approximately 6 per 100,000 and approximately 300 deaths per year.[6] Though they are relatively rare yet they constitute the fourth most common cause of death due to neoplastic conditions in young male population.[7] Testicular cancers comprise of 1% of all the male cancers worldwide. In developed countries, testicular neoplasm has been noted as most common solid tumor between 2nd and 4th decade of life.[8] Although these tumors can be derived from any cell type found in testicles, more than 95% of the testicular tumors arise from germ cells. The hypothesis behind the germ cell tumor is that the disease process begins in foetal life and comprises of abnormal proliferation of primordial germ cells.[9] Seminoma is the most common testicular germ cell tumor. Cryptorchidism, Infertility and prior history of Germ cell tumor in contralateral testis are the common risk factors of testicular tumor.[6]

Cryptorchid testis is more likely to develop germ cell tumors than is normally placed testis. Therefore, a complete and proper neonatal examination for testicular descent should be mandatory to avoid any future malignancies.[10] Incidence of testicular tumors follow a reverse pattern with increasing age.[11]

Surgical removal of testis is also known as orchidectomy. Indication for orchidectomy can include both neoplastic and non-neoplastic conditions of testis. Significantly decreased risk of malignancy is observed with the practice of orchiopexy at an early age.[12] Various investigations have come up for the diagnosis of testicular lesions such as Ultrasound, CT scan,

X-rays, Intravenous urography, Tumor marker assay as well as histopathological examination. But diagnosis of testicular lesion is primarily dependent upon histopathological examination despite of various imaging techniques and tumor marker assay. (3) The urologists, the radiologists and chemotherapists are eventually dependent upon the histological diagnosis of tumor and tumor like lesions as histopathological features have a major role in determining the prognosis and therapeutic options. (13) So, the present descriptive observational study was carried out in our tertiary care centre with the objective to assess various histopathological features of testicular lesions and thus offering a specific diagnosis which is of paramount clinical significance.

**AIMS AND OBJECTIVES**

To study the various testicular lesions and their

different histomorphological pattern along with clinical profile of the patients.

**METHODOLOGY**

This study was carried out in the department of Pathology, at Government Medical College, Latur Maharashtra during the period of two years (January 2019 – December 2020). During the present descriptive observational study, total 91 cases were studied. All the orchidectomy specimens were included in the study. Poorly fixed / autolysed specimens were excluded from the study.

The testicular specimens were processed for routine histopathological process and finally thin (3-5 u) sections were obtained. After Haematoxylene and Eosin staining sections were subjected for microscopic examination. Clinical as well as pathological findings were noted and results were analysed using SPSS version 24 software.

**OBSERVATIONS**

During the study period, total 91 orchidectomy specimens were studied and the results were analyzed as neoplastic and non-neoplastic lesions of testis. The youngest case was 04 years old while oldest case was 76 years old male. Majority of the cases were belonging to 3 rd decade (20.87%) of life followed by $4^{th}$ decade (19.79%). The mean age of the study population was 36.6 ± 20.5 years.

Among the study population, Non-neoplastic lesions predominate over Neoplastic lesions. Of these 91 cases, 78 (85.71%) cases were non-neoplastic while 13 (14.29%) were neoplastic.

The non-neoplastic lesions were predominantly seen in the 3 rd decade of life contributing for 16 cases (20.51%) followed by 2 nd and 4 th decade of life accounting for 15 cases (19.23) each.

The neoplastic lesions were commonly seen in the 3 rd and 4 th decade of life comprising of 03 cases (23.07%) each followed by 02 cases (15.38%) each in 5 th and 6 th decade of life. 01 case (7.69%) each of neoplastic lesion was observed in 7 th and 8 th decade of life. Only 01 case (7.69%) of neoplastic lesion was found in the 1 st decade of life.

The distribution of non-neoplastic lesions according to the age group is listed in Table 1. Among the non-neoplastic lesions, the non-specific Epididymoorchitis was the commonest lesion accounting for 33 cases (42.30%) followed by Undescended testis (12 cases – 15.38%), granulomatous Epididymoorchitis (11 cases – 14.10%).

During the present study, 91 cases were neoplastic. The distribution of neoplastic lesions according to the age group is shown in Table 2. Among the neoplastic lesions, classical seminoma was the predominant lesions contributing for 04 cases (30.76%), Non-Hodgkin's Lymphoma 03 cases (23.07%) 01 case (07.69%) each of Spermatocytic seminoma, Yolk sac tumor with Immature teratoma, Yolk sac tumor with Seminoma, Immature teratoma, Yolk sac tumor respectively.

Scrotal swelling (56 cases) was the commonest clinical presenting feature among the non-neoplastic lesions of testis. Scrotal pain (36), Fever (16), dysuria (08) and history of trauma (08) were other presenting complaints among non-neoplastic lesions. Cases of undescended testis were presented as empty scrotum (12). A case of tuberculous Epididymoorchitis was presented with weight loss along with other features like scrotal swelling, scrotal pain and fever. Similar to the non-neoplastic lesions, Scrotal swelling (12 cases) was the commonest clinical presentation found among

neoplastic lesions. Other features of neoplastic lesions were weight loss (03), fever (02) and abdominal lump (01).

Testicular lesions were also assessed as per their laterality. Of the non-neoplastic lesions (n=78), right sided testis was involved among 44 (56.41%) cases while left sided testis involvement seen among 26 (33.33%) cases followed by bilateral involvement among 08 (10.26%) cases. Similarly, right sided involvement was commonly found among neoplastic lesions contributing for 09 (69.23%) cases followed by left sided 04 (30.77%) cases.

The neoplastic lesions were studied according to their cell of origin. Germ cell tumors were predominate comprising of 09 cases (69.23%) followed by haematolymphoid tumors 03 cases (23.08%) and sex cord stromal tumor 01 case (07.69%). Of the study population, 13 cases were presented with undescended testis. 12 were non-neoplastic and 01 was neoplastic. Immature teratoma was the histological presentation of neoplastic lesions of undescended testis. Undescended testis with non-neoplastic lesions showed atrophic seminiferous tubules (04 cases), germinal cell hypoplasia (03 cases).

**DISCUSSION**

A wide array of non-neoplastic and neoplastic conditions involves the testis. Though testicular tumors are rare, they constitute the fourth most common cause of death due to neoplastic conditions in young male population.

In the present study most common age group involved was 21-30 years with 19 cases (20.87%) reported which is in accordance with the study by Dhawle M. et al (4) who also reported 14 cases (20%) within the same age group. In the present study the maximum number of non-neoplastic cases were found in 3rd decade with an incidence of 20.51% followed by 2nd and 4th decade with an equal incidence of 19.23% cases. Hussain S. et al (14) reported the similar finding with maximum number of non-neoplastic cases in 3rd decade (17.7%) followed by 2nd and 4th decade each with an incidence of 15.7%. Reddy H. et al (3), Baidya R. et al (8), Sharma M. et al (13) and Dhawle M. et al (4) found that the most common age group involved within non-neoplastic testicular lesion was 11-20 years with an incidence of 20.9%, 29.4%, 30.2% and 24.6% respectively. Thus, it is stated that non neoplastic testicular lesions are common in young age people.

In the present study, we found 85.71% (n=78) of the testicular lesions to be non-neoplastic and 14.28% (n=13) to be neoplastic. Baidya R. et al (2017) (8) studied histopathological pattern of testicular lesions and found 85.00% lesions as non-neoplastic and 15.00% as neoplastic which is similar to the findings of the present study. Sharma M. et al (13), Fatima S. et al (15), Tekumalla A. et al (16), Dhawle M. et al (4) and Buge A.K. et al (17) observed non-neoplastic testicular lesions in 92.98%, 69.23%, 81.25%, 81.42%and 79.48% respectively while neoplastic testicular lesions in 07.02%, 30.77%, 18.75%, 18.58% and 20.52% respectively. Thus, non neoplastic testicular lesions are common than neoplastic lesions.

In the present study the most common presenting complaint of the testicular lesions was scrotal swelling seen in 68 cases (74.72%) which was similar to the finding of Hussain S. et al (14), Dhawle M. et al (4) and Tekumalla A. et al (16) who also reported scrotal swelling to be the most common presentation with 83%, 84.2% and 87.5 respectively.

In the present study unilateral involvement was more common with 83 cases (91.20%) which was similar to the findings of Reddy H. et al (3), Myes D. et al (18), Tekumalla A. et al (16) and Hussain S. et al (14) who also reported unilateral cases to be 100%, 96.4%, 82.5% and 85% respectively. Of 83 unilateral cases right, sided lesions are more common with 53 cases (58.2%) which was similar to the findings of Tekumalla A. et al (16) and Hussain S. et al (14) who also reported the same with 51.25% and 63% right sided involvement respectively. Thus, right sided testicular involvement is more than left sided both in neoplastic as well as in non-neoplastic

testicular lesions. Dhawle M. et al (4) and Tekumalla A. et al (16) and our study showed that Non-specific epididymo-orchitis to be most common non neoplastic testicular lesion. Undescended testis is the second most common non-neoplastic testicular lesion in our study but Sharma M. et al (13) and Hussain S. et al (14) reported it as predominant entity.

Reddy H.et al (3), Sharma M. et al (13) and Hussain S. et al (14) and present study reported Tuberculous Epididymo-orchitis is the least common non-neoplastic condition. Among the neoplastic testicular lesion Seminoma was the most common tumor which is in accordance with the findings of Gupta A. et al (13), Sanjay M. et al (19), Baidya R. et al (8), Beigh A. et al (20) and Tekumalla A. et al (16), Dhawle M. et al (4) found Mixed germ cell tumor to be the most common neoplastic testicular lesion with 33.3% cases. Variation in the prevalence of the neoplastic testicular lesion might be due to geographical variation, difference in environmental exposure. Also, less sample size in present study might affect the prevalence of neoplastic testicular lesion.

**CONCLUSION**

Inguino-scrotal masses are common presentation in the Surgery outpatient department. The common causes of the mass are epididymo-orchitis, inguinal hernia, hydrocele and tumors and lymphadenopathy. Lesions of testis have similar presentations in the form of scrotal swelling and pain. A good clinical examination and ultrasound along with histopathological examination can help in accurate diagnosis and to determine the prognosis of these lesions. A social apprehension related to genital lesions is one of the most common reasons for patients reporting late in the course of disease. Social awareness in this aspect will play a large role in early diagnosis and treatment of the patient. Despite new techniques in imaging and tumor marker assay the diagnosis of testicular lesions is primarily dependent upon histopathological examination. Proper and complete neonatal examination for testicular descent should be mandatory to avoid late presentations and future malignancies.

**Table No.1:** Distribution of Non-neoplastic Lesions of Testis according to age group (n=78).

| Non-Neoplastic Lesion | Age group in Years | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 01-10 | 11-20 | 21-30 | 31-40 | 41-50 | 51-60 | 61-70 | 71-80 | No. of Cases |
| Non-specific Epididymoorchitis | -- | 03 | 05 | 07 | 07 | 05 | 05 | 01 | 33 |
| Granulomatous Epididymoorchitis | 01 | 02 | 02 | 02 | 00 | 04 | 00 | 00 | 11 |
| Testicular Torsion | 01 | 04 | 02 | 03 | 00 | 00 | 00 | 00 | 10 |
| Testicular Abscess | -- | 00 | 03 | 01 | 01 | 01 | 00 | 00 | 06 |
| Undescended Testis | 04 | 05 | 03 | 00 | 00 | 00 | 00 | 00 | 12 |
| Atrophic Testis | -- | 00 | 00 | 02 | 00 | 01 | 01 | 00 | 04 |
| Tuberculous Epididymoorchitis | -- | 01 | 01 | 00 | 00 | 00 | 00 | 00 | 02 |
| Total (n=78) | 06 | 15 | 16 | 15 | 08 | 11 | 06 | 01 | 78 |
| Percentage (%) | 7.69 | 19.23 | 20.51 | 19.23 | 10.25 | 14.11 | 7.69 | 1.29 | 100 |

**Table No. 2:** Distribution of Neoplastic Lesions of Testis according to age group (n=13).

| Non-Neoplastic Lesion | Age group in Years | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 01-10 | 11-20 | 21-30 | 31-40 | 41-50 | 51-60 | 61-70 | 71-80 | No. of Cases |
| Classical Seminoma | -- | -- | 02 | 02 | -- | -- | -- | -- | 04 |
| Spermatocytic Tumor | -- | -- | -- | -- | -- | 01 | -- | -- | 01 |
| YST+IMT | -- | -- | -- | -- | 01 | -- | -- | -- | 01 |
| YST+Seminoma | -- | -- | -- | 01 | -- | -- | -- | -- | 01 |
| Immature Teratoma | -- | -- | -- | -- | 01 | -- | -- | -- | 01 |
| Yolk Sac Tumor | 01 | -- | -- | -- | -- | -- | -- | -- | 01 |
| Ledying Cell Tumor | -- | -- | 01 | -- | -- | -- | -- | -- | 01 |
| NHL | -- | -- | -- | -- | -- | 01 | 01 | 01 | 03 |
| Total (n=13) | 01 | 00 | 03 | 03 | 02 | 02 | 01 | 01 | 13 |
| Percentage (%) | 7.69 | 0.0 | 23.08 | 23.08 | 15.39 | 15.38 | 7.69 | 7.69 | 100% |

YST: Yolk Sac Tumor, IMT: Immature Teratoma, NHL: Non-Hodgkin's Lymphoma.

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