



HISTOPATHOLOGICAL SPECTRUM OF ORCHIDECTOMY SPECIMENS AT JHALAWAR MEDICAL COLLEGE – A FOUR YEAR STUDY

Pathology

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ABSTRACT

BACKGROUND: Testis is affected by various etiologies classified under heading of Non-neoplastic and Neoplastic lesions. Non-neoplastic are further classified under major heading of Congenital anomaly, Inflammation or Infection, Vascular Disorders, Atrophy due to various etiologies. Neoplastic lesions are though very less as compared to Non-neoplastic lesions but their early diagnosis plays very pivotal role in understanding age distribution as well as further management. **OBJECTIVES:** Our study aims to analyze Histopathological spectrum of various orchidectomy specimens as well as to calculate age incidence of various testicular lesions. **MATERIAL AND METHODS:** This retrospective and prospective study of four years from January 2018 to December 2021 with total of 103 specimens conducted in department of pathology of jhalawar medical college. All orchidectomy specimens processed further and evaluated microscopically. **RESULT:** Overall Non-neoplastic lesions found to be most common than neoplastic lesions (84.47% and 15.53% respectively). Among Non-neoplastic lesions we found torsion/infarction (41.38%) is more common, second most common found to be cryptorchidism (16.09%). Among Neoplastic lesions Seminoma (37.50%) is more common compared to embryonal carcinoma (25%) considered to be second common. We found inflammatory lesions are much less in incidence among younger age group. **CONCLUSION:** We found histopathological examination as very basic, rational and effective tool compared to newly emerging molecular techniques. It turns out to be very helpful in diagnosing various testicular lesions as well as classifying their age incidences.

KEYWORDS

Orchidectomy, Testicular Lesions, Torsion, Seminoma

INTRODUCTION

Testes are affected by varying range of Non-neoplastic and Neoplastic lesions. However Non-neoplastic lesions are much more common in occurrence than neoplastic lesions. Using Histopathological examination as an important primary asset in betterment of deciding patient's treatment modality as well as backing to various non invasive techniques such as ultrasonography or tumour markers assay. Epidemiology of various Non-neoplastic and Neoplastic lesions in testis varies widely in different geographical boundaries. Incidence of undescended testes or cryptorchidism is calculated approximately 1-2 % within 3-12 months of age worldwide. Similarly neoplastic lesions such as germ cell tumours most commonly affects 15-45 years of age group, out of all malignant tumours occurring in males testicular malignancy constitute only 1-2% in its total.^[1,2,3]

Distinct non neoplastic pathologic conditions affect the testis, can be further classified into congenital abnormalities (Cryptorchidism, Anorchism, polyorchism, testicular-splenic fusion, adrenal cortical rests), infertility, inflammation and infection (Epididymitis, Orchitis of various origin), vascular disorders (systemic vasculitis, varicocele, torsion and infarction), atrophy.^[1,3,6]

Various neoplastic conditions affects the testis but incidence is quite lesser than benign/non neoplastic conditions, can be further classified into germ cell tumours of testis (Seminoma, Yolk sac tumor, Teratoma, etc), Non germ cell tumors, secondaries.^[2,6]

MATERIAL AND METHODS

Total of 103 orchidectomy specimens received at Department Of Pathology, Jhalawar Medical College, Jhalawar over period of four years from January 2018 to December 2021. Specimens were fixed in 10% formalin. After gross examinations, processed in automated tissue processor with paraffin embedding, sectioning and staining by Hematoxylin and Eosin stains. Various lesions will be histopathologically classified and studied according to WHO classification.^[4,7]

Inclusion criteria:

Unilateral simple orchidectomy specimens, Radical orchidectomy specimens and bilateral orchidectomy specimens received in Department of Pathology, Jhalawar medical college, Jhalawar.

Exclusion criteria:

Small testicular biopsies received for infertility examination are excluded from study.

METHODOLOGY

After obtaining approval and clearance from the ethical committee only those patients meeting the inclusion and exclusion criteria will be enrolled for the study.

Gross examination^[8]

1. Orient the specimen by keeping in mind that the cord structures pass superiorly and epididymis may be palpated superiorly and posteriorly.
2. Take measurements of specimen and the cord length also.
3. Ink the cord cut margin from the tip of the spermatic cord.
4. Cut up the testis from tunica aspect towards the base of cord into multiple parallel. For adequate fixation sections. Fix the specimen for 12-24 hrs.
5. After fixation, take complete section of the cord cut margin of the specimen after measuring its distance from the tumor/base of cord.
6. Examine and describe the tumor dimensions, texture, colour, necrotic and hemorrhagic areas. Look for obvious hair, cartilage, bone and tooth formation.
7. Grossly assess the extent of tumor and its relation to layers of tunica, epididymis, rete testis and base of cord.
8. Take sections from base of cord before proceeding to submit sections from tumor.
9. Take sections of tumor for microscopy: one section per cm of tumor; tumor with layers of tunica; tumor with rete/epididymis; tumor with native testicular parenchyma if any left.
10. If primary retroperitoneal lymph nodal dissection has been sent by surgeon, gross the nodes and submit them.

Hematoxylin and eosin stain for sections^[9]

1. De-wax sections, rehydrate through descending grades of alcohol to water.
2. Remove fixation pigments if necessary.
3. Stain in an alum hematoxylin of choice for a suitable time.
4. Wash well in running tap water until sections 'blue' for 5 minutes or less.
5. Differentiate in 1% acid alcohol (1% HCl in 70% alcohol) for 5-10 seconds
6. Wash well in tap water until sections are again 'blue' (10-15 minutes), or Blue by dipping in an alkaline solution (eg. ammonia

- water), followed by 5 minute tap water wash.
7. Stain in 1% eosin Y for 10 minutes.
 8. Wash in running tap water for 1–5 minutes.
 9. Dehydrate through alcohols, clear, and mount.

OBSERVATION AND RESULTS

In the present study most common lesion was found to be torsion and infarction accounting for 36 cases, 34.95% (n = 103) followed by next common cryptorchid lesion recorded for 14 cases, 13.59%. The other lesions with their incidence are classified in Table 1.

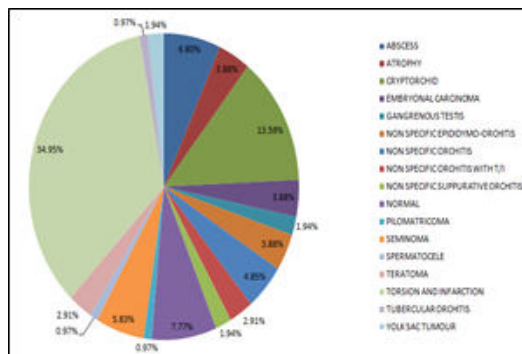


Chart 1- Incidence of different testicular lesions in orchidectomy specimens.

Table 1 – Histopathological Lesions Among Orchidectomy Specimens.

HISTOPATHOLOGICAL DIAGNOSIS	CASES	%age
NEOPLASTIC		
PILOMATRICOMA	1	0.97%
SEMINOMA	6	5.83%
EMBRYONAL CARCINOMA	4	3.88%
TERATOMA	3	2.91%
YOLK SAC TUMOUR	2	1.94%
NON NEOPLASTIC LESIONS		
NORMAL	8	7.77%
CRYPTORCHID	14	13.59%
TORSION AND INFARCTION	36	34.95%
GANGRENOUS TESTIS	2	1.94%
ATROPHY	4	3.88%
NON SPECIFIC EPIDIDYMO-ORCHITIS	4	3.88%
NON SPECIFIC SUPPURATIVE ORCHITIS	2	1.94%
NON SPECIFIC ORCHITIS WITH T/I	3	2.91%
NON SPECIFIC ORCHITIS	5	4.85%
TUBERCULAR ORCHITIS	1	0.97%
SPERMATOCELE	1	0.97%
ABSCESS	7	6.80%
TOTAL	103	

In this study it is observed that out of 103 cases, 87 cases reported for non neoplastic lesions (84.77%) and 16 cases were reported for neoplastic origin (15.53%). Among all age groups incidence of non neoplastic lesions are higher compared to neoplastic lesions, incidence of neoplastic lesion among age group >60 years is nil as not a single neoplastic lesion reported under this group (Table 2).

Table 2 – Incidence of Neoplastic and Non neoplastic Lesions age group wise.

LESIONS	0-20 Years (n = 27)	21-40 Years (n = 36)	40-60 Years (n = 28)	>60 Years (n = 12)	OVERALL %age (n = 103)
NON NEOPLASTIC	92.59%	77.78%	78.57%	100.00%	84.47%
NEOPLASTIC	7.41%	22.22%	21.43%	0	15.53%

Among age group 0-20 years there is equal incidence of embryonal carcinoma and yolk sac tumor as 6.25%, in group 21-40 years and 41-60 years incidence of seminoma is higher as 18.75% equally, not a single neoplastic case is reported in group >60 years. Among neoplastic lesions seminoma is the most common lesion in almost all the studies which is comparable to our study. (Table 3)

Table 3 – Incidence of Different neoplastic lesions age group wise.

NEOPLASTIC LESIONS	0-20 Years	21-40 Years	40-60 Years	>60 Years	OVERALL %age
(n = 16)					
PILOMATRICOMA	0.00%	0.00%	6.25%	0.00%	6.25%
SEMINOMA	0.00%	18.75%	18.75%	0.00%	37.50%
EMBRYONAL CARCINOMA	6.25%	12.50%	6.25%	0.00%	25.00%
TERATOMA	0.00%	12.50%	6.25%	0.00%	18.75%
YOLK SAC TUMOUR	6.25%	6.25%	0.00%	0.00%	12.50%
OVERALL %age	12.50%	30.00%	37.50%	0.00%	

In age group 0-20 years most common non neoplastic lesion found to be torsion or infarction with incidence of 27.59%. In 21-40 years of age group most common lesion is again torsion or infarction with 11.49%, in group 40-60 years Abscess, Cryptorchidism and Non Specific orchitis are most common, In group >60 years most testis are having normal architecture done mainly for hormonal ablation in prostatic carcinoma (Table 4).

Table 4 - Incidence of Different Non neoplastic lesions age group wise.

NON NEOPLASTIC LESIONS	0-20 Years	21-40 Years	40-60 Years	>60 Years	OVERALL %age
(n = 87)					
NORMAL	0.00%	1.15%	3.45%	4.60%	9.20%
CRYPTORCHID	1.15%	6.90%	4.60%	3.45%	16.09%
TORSION AND INFARCTION	27.59%	11.49%	2.30%	0.00%	41.38%
GANGRENOUS TESTIS	0.00%	1.15%	1.15%	0.00%	2.30%
ATROPHY	0.00%	2.30%	0.00%	2.30%	4.60%
NON SPECIFIC EPIDIDYMO-ORCHITIS	0.00%	0.00%	3.45%	1.15%	4.60%
NON SPECIFIC SUPPURATIVE ORCHITIS	0.00%	2.30%	0.00%	0.00%	2.30%
NON SPECIFIC ORCHITIS WITH T/I	0.00%	2.30%	1.15%	0.00%	3.45%
NON SPECIFIC ORCHITIS	0.00%	1.15%	4.60%	0.00%	5.75%
TUBERCULAR ORCHITIS	0.00%	1.15%	0.00%	0.00%	1.15%
SPERMATOCELE	0.00%	0.00%	0.00%	1.15%	1.15%
ABSCESS	0.00%	2.30%	4.60%	1.15%	8.05%
OVERALL %age	28.74%	32.18%	25.29%	13.79%	

DISCUSSION

In present study most common lesion among non neoplastic group is found to be torsion or infarction including gangrenous testis with incidence of 43.68% followed by cryptorchidism and inflammatory etiology with an incidence rate of 16.09% respectively in total of 87 non neoplastic lesions which is comparable Baidya R et al. [20] with incidence of Torsion or infarction as 54.90%, There is quite variation in incidence of different non neoplastic lesions because of various geographical and environmental factors or boundations. (Table 5)

Among neoplastic lesions most common lesion is found to be seminoma with an incidence rate of 37.50% followed by embryonal carcinoma having incidence of 25% among total of 16 cases of neoplastic origin in comparison to other studies Buge Aarti et al [10] Seminoma is common with incidence of 37.5%, Tekumalla A et al [13] again seminoma is most common with incidence of 40%, In Baidya R et al [20] seminoma is the most common lesion (44.44%) Among neoplastic lesions seminoma is the most common lesion in almost all the studies which is comparable to our study. (Table 5)

In present study it is observed that out of 103 cases, 87 cases reported for non neoplastic lesions (84.77%) and 16 cases were reported for neoplastic origin (15.53%) which is comparable with other studies stated in Table 6.

CONCLUSION

Testicular lesions are having wide range of Histopathological

spectrum. Neoplastic Lesions are much more common than neoplastic lesions. Among non neoplastic lesions torsion or infarction is the most common lesion studied. Among neoplastic lesions seminoma is the most common lesion. Non neoplastic lesions are common in all age groups but as age advances frequency of neoplastic lesions decreases. Histopathological diagnosis is found to be gold standard tool in definitive diagnosis of various testicular lesions as Clinical or USG Findings may mimic neoplastic lesion as non neoplastic one or vice versa. Our study is quite comparable with other studies at most of the points, variation is their due to different sample size as well as geographical and environmental boundations.

Table 5 – Comparison of different Histopathological lesions in different studies.

NON NEOPLASTIC LESIONS	Buge Aarti et al ^[10] (2020) (n = 31)	Tekumalla A et al ^[12] (2019) (n = 65)	Baidya R et al ^[16] (2017) (n = 51)	Present Study (n = 87)
NORMAL	0.00%	21.50%	0.00%	9.20%
ABSCISS	12.90%	0.00%	15.68%	8.05%
ATROPHY	12.90%	23.10%	0.00%	4.60%
CRYPTORCHID	9.68%	4.60%	7.84%	16.09%
INFLAMMATORY ETIOLOGY	32.26%	38.50%	9.80%	16.09%
TUBERCULAR ORCHITIS	9.68%	0.00%	9.80%	1.15%
TORSION INFARCTION				
GANGRENOUS	16.13%	12.30%	54.90%	43.68%
OTHERS NON NEOPLASTIC	6.45%	0.00%	1.96%	1.15%
NEOPLASTIC LESIONS	(n = 8)	(n = 15)	(n = 9)	(n = 16)
TERATOMA	25.00%	13.34%	11.11%	18.75%
SEMINOMA	37.50%	40.00%	44.44%	37.50%
EMBRYONAL CARCINOMA	0.00%	0.00%	0.00%	25.00%
YOLK SAC TUMOUR	0.00%	6.67%	0.00%	12.50%
OTHERS NEOPLASTIC	37.50%	40.00%	44.44%	6.25%

Table 6 - Comparison of Non Neoplastic and Neoplastic lesions in different studies.

STUDIES	Non Neoplastic Lesions	Neoplastic Lesions
Buge Aarti et al ^[10] (2020)	79.48%	20.51%
Tekumalla A et al ^[12] (2019)	81.25%	18.75%
Kalpna R et al ^[16] (2018)	92.86%	7.14%
Charak A et al ^[15] (2018)	90.20%	9.80%
Baidya R et al ^[20] (2017)	85.00%	15.00%
Present Study	84.47%	15.53%

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