

## HISTOMORPHOLOGICAL SPECTRUM OF TESTICULAR LESIONS IN A TERTIARY CARE HOSPITAL- A FIVE YEAR RETROSPECTIVE STUDY

### Histopathology

|                                |                                                                                                                                     |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
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### ABSTRACT

**Background-** Testis is affected by both neoplastic and non-neoplastic conditions which can be present in all age groups. Although rare, they are of great importance due to their varied histological appearances. Non-neoplastic lesions are more common compared to neoplastic lesions. Present study was done to find the incidence, spectrum, pattern and age distribution of testicular lesions, with an emphasis on common neoplastic lesions in undescended testis.

#### Aims And Objectives:

- To determine the incidence and histomorphological pattern of lesions seen in orchidectomy specimens.
- To determine the age distribution of the lesions.
- To find the incidence of neoplastic lesions occurring in cases of undescended testis.

**Materials And Methods:** Pathology results of all orchidectomy specimens received in histopathology section at KIMS Hubballi, were retrieved from archives between years 2018-2022. Retrospective study was done. Data was analysed using MS Excel Profession Plus. **Results:** From 2018-2022, a total of 102 specimens of orchidectomies were received in the department of Pathology, KIMS Hubballi. Out of 102 cases, 82 cases (80.39%) turned out to be non-neoplastic while 20 (19.60%) were neoplastic and in 15 cases, orchidectomy was done for the cases of carcinoma prostate. Among the non-neoplastic lesions, the most common lesion was epididymo-orchitis with a total of 30 cases (29.41%) followed by atrophic testis with a total of 22 cases (21.56%). Among the neoplastic lesions, the commonest tumour was found to be seminoma accounting for 11 cases (10.78%). **Conclusion:** Majority of testicular lesions are non-neoplastic and neoplastic lesions are rare. Non-neoplastic lesions are seen in all age groups. Neoplastic lesions are generally seen in younger age. Histopathological examination is necessary to serve an accurate diagnosis of testicular swellings.

### KEYWORDS

Testis, undescended testis, seminoma, torsion, epididymo-orchitis

### INTRODUCTION

The normal adult testis is an ovoid paired organ, each measuring  $4.5 \times 2.5 \times 3$  cm, and weighing approximately 20 grams. They are suspended within scrotal sacs by spermatic cords.<sup>1</sup>

Testis is affected by both neoplastic and non-neoplastic conditions which can present in all the age groups.<sup>2</sup> There are various testicular lesions, ranging from paediatric to adult age groups.<sup>3</sup>

Non-neoplastic lesions are more common compared to neoplastic lesions. Non-neoplastic lesions include inflammatory lesions like acute and chronic epididymo-orchitis, vascular lesions like torsion of testis, atrophy with maturation arrest of spermatogenesis.<sup>4</sup>

The testicular tumors are relatively rare yet they constitute the fourth most common cause of death from neoplastic conditions in young male population. Although testicular cancer accounts for only 1% of all tumors in male, it is the most common malignancy in males between 15 & 34 years of age.<sup>5</sup>

There is a definite geographic and racial distribution in testicular tumours and its age distribution is also distinct from other tumours.<sup>6</sup>

The reported risk for malignancy in cryptorchidism is 48.9 per 100,000, which is 22 times higher than in the general population. The risk of tumour in an intra-abdominal testis is six times higher than in a cryptorchid testis in another location only to diminish the malignancy potential but also to allow a scrotal testis to be more accessible to physical examination.<sup>7</sup>

### MATERIALS AND METHODS

Pathology results of all orchidectomy specimens received in histopathology section at KIMS Hubballi, were retrieved from archives between years 2018-2022. Retrospective study was done, recording the age and type of lesion encountered. Histopathological

classification was performed and tumours were classified according to the neoplastic and non-neoplastic lesions. Data was analysed using MS excel professional plus version.

### RESULTS:

From 2018-2022, a total of 102 specimens of orchidectomies were received in the department of Pathology, KIMS Hubballi. Out of 102 cases, 82 cases (80.39%) turned out to be non-neoplastic while 20 (19.60%) were neoplastic and in 15 cases, orchidectomy was done for the cases of carcinoma prostate.

Among the non-neoplastic lesions, the most common lesion was epididymo-orchitis with a total of 30 cases (29.41%) followed by atrophic testis with a total of 22 cases (21.56%). Among the neoplastic lesions, the commonest tumour was found to be seminoma accounting for 11 cases (10.78%).

Out of the total 102 specimens, 23 specimens were that of undescended testis, among which 19 were benign cases and 4 were malignant. The benign cases included atrophic testis that is 15 (65.21%) cases, followed by 3 (13.04%) cases of Leydig cell hyperplasia and 1 (4.34%) case of Sertoli cell only. There were no cases of torsion of testis. Out of the 4 malignant lesions, there were 2 cases (17.39%) of yolk sac tumour, one case (4.34%) of mixed germ cell tumour and 1 case (4.34%) of seminoma with coagulative changes as shown in the pie chart.

Age of patients ranged from 1m to 75 years. Average age was found to be 43 years. Most commonly involved was 4<sup>th</sup> decade.

Among the neoplastic lesions, the average age was found to be 36 years and for the non-neoplastic lesions, average age was found to be 44 years.

There was one case of ambiguous genitalia and one case of male pseudohermaphroditism.

There were 79 cases of orchidectomies which were done for lesions that occurred in normally descended testis, out of which the neoplastic lesions constituted 20.25% of the cases. The percentage of neoplastic lesions in undescended testis was 17.39% among the 23 cases.

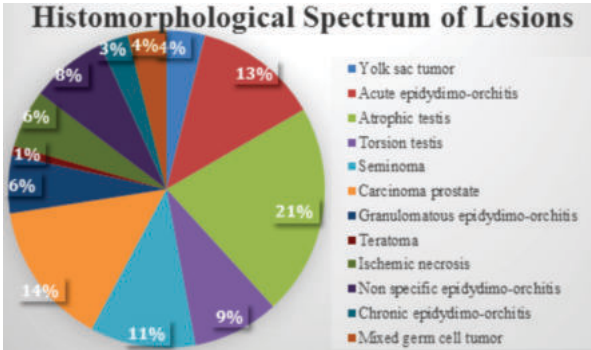


Fig 1. Lesions in undescended testis.

Table. 01- Age Distribution Of Lesions

| Sl. No. | Type of tumour         | Age groups (in decades) |       |       |       |       |       |       |       |     | Total (n=102) |
|---------|------------------------|-------------------------|-------|-------|-------|-------|-------|-------|-------|-----|---------------|
|         |                        | 0-10                    | 10-20 | 20-30 | 30-40 | 40-50 | 50-60 | 60-70 | 70-80 |     |               |
| 1       | Seminoma               | -                       | -     | 3     | 6     | 1     | 1     | -     | -     | 11  |               |
| 2       | Yolk sac tumor         | 2                       | -     | 1     | -     | -     | 1     | -     | -     | 4   |               |
| 3       | Mixed germ cell tumor  | 1                       | -     | 1     | 1     | 1     | -     | -     | -     | 4   |               |
| 4       | Teratoma               | -                       | -     | -     | 1     | -     | -     | -     | -     | 1   |               |
| 5       | Atrophic testis        | -                       | -     | 9     | 7     | 3     | -     | 1     | 2     | 22  |               |
| 6       | Torsion testis         | -                       | 4     | 4     | -     | 1     | -     | -     | -     | 9   |               |
| 7       | Acute orchitis         | -                       | -     | 3     | 4     | 3     | -     | 3     | -     | 13  |               |
| 8       | Granulomatous orchitis | -                       | -     | -     | 4     | 1     | 1     | -     | -     | 6   |               |
| 9       | Chronic orchitis       | -                       | -     | 1     | -     | -     | 1     | -     | 1     | 3   |               |
| 10      | Non Specific orchitis  | 1                       | -     | -     | 1     | 3     | -     | 1     | 2     | 8   |               |
| 11      | Ischemic necrosis      | -                       | 1     | 2     | -     | 1     | -     | 2     | -     | 6   |               |
| 12      | Carcinoma prostate     | -                       | -     | -     | -     | 1     | 1     | 8     | 5     | 15  |               |
|         | Total                  | 4                       | 5     | 24    | 24    | 15    | 5     | 15    | 10    | 102 |               |

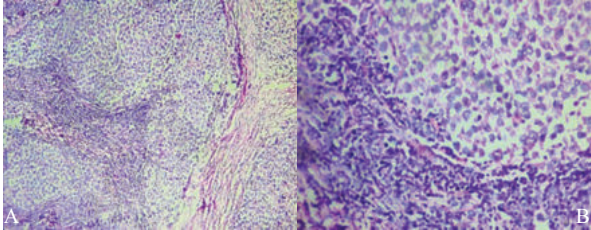


Figure 2 A and B: Seminoma (H&E 20x and 40x)

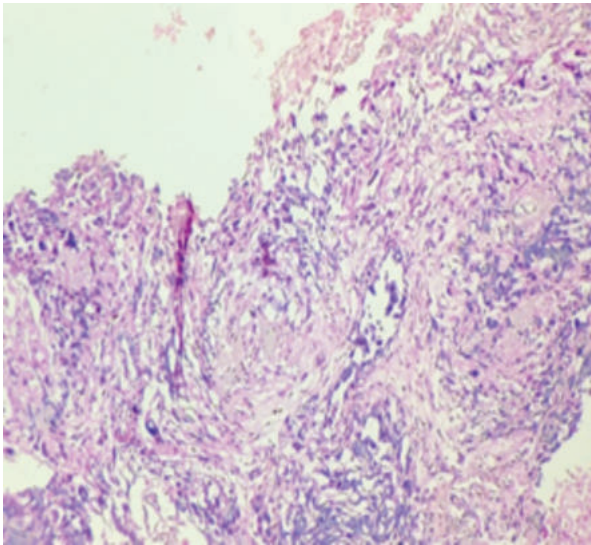


Figure 3: Mixed germ cell tumour (H&E 20x)

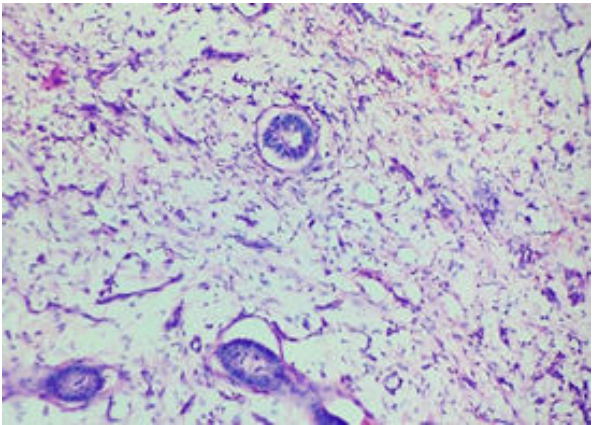


Figure 4: Prepubertal yolk sac tumour. (H&E 40x)

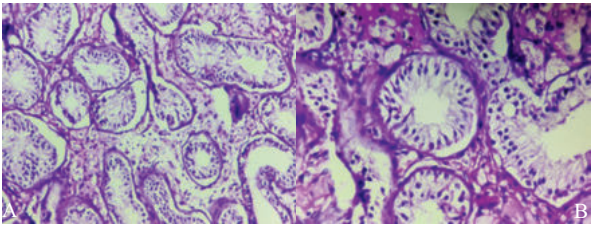


Figure 5 AAnd B Atrophic testis (20x and 40x)

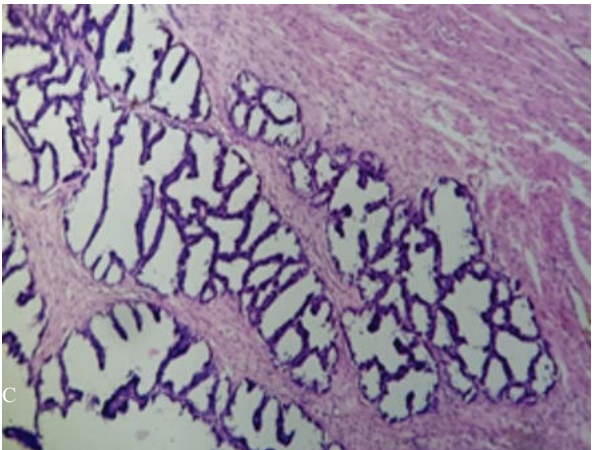
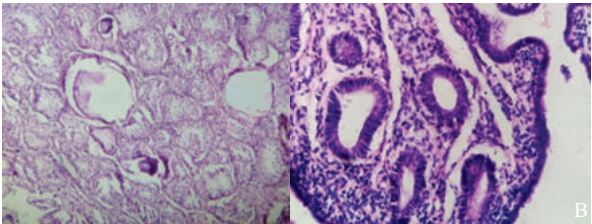


Figure 8- case of male pseudohermaphroditism A- Microliths in seminiferous tubules, B- Endometrial tissue, C- Structure of fallopian tube

DISCUSSION

Table 2: Comparison Of Occurrence Of Various Lesions

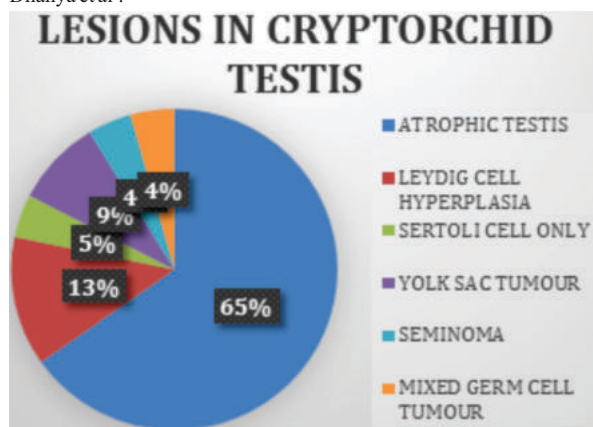
| Sl. No. | Type of Lesion      | Redd y et al <sup>8</sup> (n=100) | Dhaw le et al <sup>9</sup> (n=70) | Shar ma M et al <sup>10</sup> (n=53) | Char ak et al <sup>11</sup> (n=52) | Gaikw ad SL et al <sup>12</sup> (n=120) | Dhan ya et al [2] (n=26) | Present study (n=102) |
|---------|---------------------|-----------------------------------|-----------------------------------|--------------------------------------|------------------------------------|-----------------------------------------|--------------------------|-----------------------|
| 1       | Undesce nded Testis | 14%                               | 7.01 %                            | 39.62 %                              | 46.1%                              | 15.6%                                   | 19.2%                    | 22.54%                |
| 2       | Acute orchitis      | 19.76 %                           | 14.03 %                           | 5.66%                                | 7.6%                               | 18.7%                                   | 19.2%                    | 12.74%                |
| 3       | Chronic orchitis    | 3.5%                              | -                                 | 15.09 %                              | -                                  | 19.7%                                   | 15.3%                    | 3.92%                 |

|    |                        |        |         |         |       |       |       |        |
|----|------------------------|--------|---------|---------|-------|-------|-------|--------|
| 4  | Granulomatous orchitis | 3.5%   | 1.75 %  | 3.77%   | 1.92% | 6.8%  | 7.6%  | 5.88%  |
| 5  | Testicular torsion     | 22.1 % | 17.54 % | 18.86 % | 15.3% | 11.5% | 11.5% | 8.82%  |
| 6  | Atrophic testis        | -      | 15.78 % | 16.98 % | 3.8%  | 9.80% | 23.0% | 21.56% |
| 7  | Yolk sac tumor         | -      | -       | 1.88%   | 1.92% | 1.66% | -     | 3.92%  |
| 8  | Germ cell tumor        | 7.2%   | 8.57 %  | 1.88%   | -     | -     | -     | 3.92%  |
| 9  | Seminoma               | 42.9 % | 5.71 %  | 1.88%   | 7.6%  | 6.66% | 3.86% | 10.78% |
| 10 | Teratoma               | -      | -       | 1.88%   | -     | -     | -     | 0.98%  |
| 11 | Others                 | -      | 4.28 %  | -       | 1.92% | -     | -     | 14.70% |

Present study included 102 cases which presented with testicular pathologies. Undescended testis was found to be the commonest non neoplastic lesion which was similar to the studies performed by various authors as depicted in Table 2.

Next common finding in the present study was atrophic testis which was similar in cases of studies conducted by Dhawale<sup>3</sup> and Sharma et al<sup>10</sup>.

Among the neoplastic lesions, Seminoma was found to be the commonest lesion as seen in studies conducted by Reddy et al<sup>8</sup>, Dhawale et al<sup>3</sup>, Sharma et al<sup>10</sup>, Gaikwad et al<sup>12</sup>, Charak et al<sup>11</sup>, and Dhanya et al<sup>2</sup>.

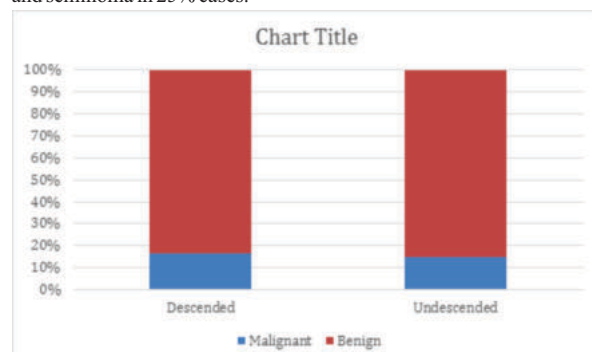


**Figure 9** Lesions in undescended testis.

In an article published by J D Fonger et al, in 1981, the authors reviewed the records of patients with testicular tumours seen for seminoma (1958 to 1975) and nonseminoma (1958 to 1970). Of 646 patients, 53 (8.2%) had a history of testicular maldescent; in 42 (79%) the maldescent was unilateral and in 6 of these, the tumour developed in the normally descended testis. Tumours found in the 53 patients were seminoma (38 patients), teratoma (7 patients), embryonal carcinoma (6 patients), teratocarcinoma (1 patient) and choriocarcinoma (1 patient). Twenty-five (66%) of the 38 seminomas occurred in testes located outside the scrotum, whereas only 6 (40%) of 15 nonseminomas occurred in a non-scrotal position, suggesting that persistent maldescent favours seminoma over nonseminoma. They concluded that in their study no statement could be made about the effect of orchiopexy on tumour risk. However, this procedure appeared to lead to an earlier diagnosis and might influence the type of tumour that subsequently develops.<sup>3</sup> Contrast to their study, present study found 75% cases to be non seminomatous and only 25% cases of seminomatous tumor.

An analysis of 125 patients done by M.A. Batata et al in 1980, with a history or clinical evidence of cryptorchidism and testicular germinal tumor treated at their hospital from 1934 to 1975 was presented. Forty-two cryptorchid patients (uncorrected cases) presented with either ipsilateral (24 patients), abdominal (14 patients) or contralateral intrascrotal tumors (4 patients). Tumor histologic types on orchiectomy were pure seminoma in 54 patients, embryonal carcinoma in 35, teratocarcinoma in 33 and pure choriocarcinoma in three.<sup>4</sup>

Unlike their study, present study found yolk sac tumours in 50% cases and seminoma in 25% cases.



**Figure 10-** Incidence of malignant lesions in case of normally descended testis and undescended testis.

As evidenced in figure 10, the risk of developing malignancy is very likely in case of undescended testis, i.e., out of 79 normally descended cases 16 cases were malignant (20.25%) and out of 23 undescended cases 04 were malignant (17.39%) and the incidence would likely go up in case of higher sample size.

## CONCLUSION:

In conclusion it can be stated that, the incidence of non-neoplastic lesion is common in testicular lesions, although rare, but there is risk of developing malignant lesions too. The clinical presentation as well as histomorphological appearances of the lesions is varied hence it is important to study the microscopic finding in details. The undescended testis harbour equal or sometimes higher risk of developing malignant lesions hence it is important to subject all the specimens of undescended testis to rigorous histopathological examination so as to not miss any intra-tubular germ cell neoplasia.

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