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Histopathological spectrum of lesions of testis and epididymis- A five year study

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Abstract

Testis is an important component of male reproductive system and is responsible for reproductive and endocrine functions. It is vulnerable to trauma, torsion and various other diseases including malignancy thus making early diagnosis and management a life saver in many conditions. The present study aimed to study the incidence and histopathology of various testicular lesions at department of Pathology, Government Medical College and Hospital, Miraj, Maharashtra, for a period of five years. The clinical details of each case were noted. The gross and microscopic examinations were done. In the present study, 103 cases with a total of 112 lesions i.e. 9 patients had bilateral lesions were studied. Non-neoplastic lesions were 104 (92.86%) and neoplastic lesions were 8 (7.14%). The youngest patient was of 5 years and oldest was of 88 years. Unilateral lesions were more common than bilateral. Also, right testis was affected more than the left. Testicular swelling was the most common presenting symptom, in 57 cases (55.34%). Cryptorchid testis was the most common non-neoplastic lesion whereas mixed germ cell tumor was the most common neoplastic lesion in our study. Conclusion: Before considering orchidectomy, a testicular mass should be evaluated for any infectious lesion.

Keywords: Testis, Non-neoplastic lesions, Neoplastic lesions, Histopathology.

Introduction

The testes are paired organs lying in the scrotal sac and are suspended by spermatic cord. Testicular lesions vary over a wide range of spectrum i.e. congenital anomalies, regressive changes, inflammatory or infectious lesions, vascular disorders and tumors. There has been an increase in the incidence of testicular neoplasms, with germ cell tumors being the most common neoplasm arising from the testis.[1]. With the advance in technology, various imaging modalities and tumor marker assays are developed but the diagnosis of testicular lesion is still largely dependent on histopathology. This study is undertaken to study the incidence, age distribution and histopathology of various testicular lesions at our hospital.

Material & methods

The present study was carried out at Government medical college and hospital, Miraj, Maharashtra, India, from January 2011 to December 2015. We studied histopathology of 112 cases representing surgical samples from 103 patients. [Unilateral-94, Bilateral-09] All orchidectomy and testicular biopsy specimens were included in the study. All the lesions of testis and epididymis were included in the study. Paratesticular

lesions and lesions of scrotum were excluded. All the clinical details, such as age, clinical features etc were recorded.

The details of gross examination were noted. The specimens were fixed in 10% formalin for 16-18 hrs. The sections were taken from representative areas. After routine tissue processing, paraffin blocks were prepared, sections (3 – 5 microns in thickness) were cut and slides were prepared. Routine haematoxylin and eosin stain was used and special stains were done whenever necessary.

Results

The present study comprised of histopathology of 112 cases representing surgical samples from 103 patients.[Unilateral-94, Bilateral-09 (three cases each of infertility and senile changes, two cases of epididymal cyst and one was abscess)]. Out of 112 lesions, 104 were non-neoplastic and eight were neoplasms. The most common age group affected by non-neoplastic lesions was 41-50 years (19.23%) followed by 51-60 years (18.27%). (Table 1)The youngest patient was of 5 years and oldest patient was of 88 years.

In our study, eight malignant testicular tumors were found. From these, maximum cases belonged to age group of 21-30 years (37.5%). The youngest patient of testicular tumor was of 16years and oldest was of 70years.

The patients presented with varied clinical features (Table 2). Swelling was the most common presenting feature, seen in 57 cases (55.34%). From 57 cases of swelling, eight cases were diagnosed as neoplastic, 49 cases were non-neoplastic including abscess, epididymo-orchitis, granulomatous orchitis, caseating tuberculosis etc. All the eight neoplastic lesions presented as swelling.

The second most common presenting feature was pain associated with swelling, seen in 20 cases. From these, eight cases were diagnosed as acute on chronic non specific epididymo-orchitis, four as torsion, three as spermatocele, two as xanthogranulomatous epididymo-orchitis, and one case each of testicular regression syndrome, abscess and senile changes.

The least common presenting feature was pain and urinary tract infection, seen in single case which was diagnosed as malakoplakia on histopathology.

Table no 3 shows laterality and side affected in various testicular lesions. In non-neoplastic cases, majority of the lesions were found on right side - 49 cases (51.58%) followed by left in 37 cases (38.95%). Bilateral lesions were found in 9 cases (9.47%). Neoplastic lesions showed equal distribution on both the sides.

In the non-neoplastic group, most common lesion was crytorchid testis, observed in 19 cases (18.27%) followed by acute or chronic non specific epididymo-orchitis in 18 cases (17.31%). Seven cases each, of testicular regression syndrome and torsion was diagnosed. The other lesions were senile changes, testicular abscess, epididymal cyst and spermatocele, xanthogranulomatous orchitis, acute on chronic non specific epididymo-orchitis with funiculitis, granulomatous orchitis, malakoplakia, complete maturation arrest, partial maturation arrest and sertoli cell only syndrome. One case each, of only congestion, mesothelial cyst, organising abscess, acute non specific epididymo-orchitis, pyocele with testicular infarction, chronic non specific epididymo-orchitis and caseating tuberculosis was noted. (Table 4)

Among neoplasms, three cases of spermatocytic seminoma (37.5%) and five cases of mixed germ cell tumor with combinations of mature/immature teratoma with yolk sac tumor, choriocarcinoma, embryonal carcinoma and seminoma were observed (Table 5).

Discussion

Testis is affected at any age group by both non -neoplastic lesions as well as by neoplasms.[2] In our study of 112 testicular lesions, there was predominance of non -

neoplastic lesions [104 (92.86%)] whereas 8 were neoplasms accounting for 7.14%. Other studies done by Reddy [2], Patel et al [3] and Devi et al[4] also had predominance of non -neoplastic lesions.

Testicular swelling was the most common presenting symptom in 57 cases (55.34%) which is similar to the other studies done by Robson et al [5] and Duncan et al.[6] In our study, some patients with non -neoplastic testicular lesions also presented with testicular swelling with or without associated pain, thus highlighting the importance of histopathology in the diagnosis.

In the present study, unilateral involvement of testis was more common than bilateral and right testis was affected more than the left testis. These findings were similar to study done by Patel et al. [3]

Isolated epididymo-orchitis may pose diagnostic difficulty and can mimic testicular neoplasm.Tuberculous epididymo-orchitis is an uncommon disease that affects patients in 3rd to 8th decade. Its incidence has increased recently due to a rising incidence of immunocompromised patients with HIV infection. Our patient was 60 years old who presented with testicular swelling which was clinically suspected as malignancy.

Two cases of granulomatous orchitis were found in our study. Grunberg [7] found the prevalence of granulomatous orchitis in 5th to 6 th decade. Our patients were 45 and 74 years old respectively. Acute on chronic non-specific epididymo-orchitis was the commonest non-neoplastic inflammatory lesion in our study, accounting for 17.13%. In a study conducted by Patel et al[3], nonspecific epididymoorchitis accounted for 9.4%.

In genitourinary system, xanthogranulomatous inflammation is common in kidneys and urinary bladder however affection of testis has also been documented in the literature. Clinically, it presents as hard testicular mass resembling malignancy.[8] In our study, all the three patients were elderly, presented with left testicular swelling and pain. Histopathology showed destruction of tissue with replacement by lipid-laden macrophages.

Testicular malakoplakia, an uncommon chronic granulomatous inflammation, was first reported in 1958. Testicular involvement represents only 12% of genital malakoplakia with around 388 cases in the literature.[9] In the present study 2 cases (1.92%) were diagnosed as malakoplakia and one of those patients presented with complaints of urinary tract infection. The histopathology in our cases showed testis with chronic inflammatory infiltrate along with large cells with abundant, eosinophilic cytoplasm (von Hansemann cells) containing typical rounded (2 to 10 um in diameter) basophilic Michaelis-Gutmann (MG) bodies. Some MG bodies showed concentric laminated (targetoid or 'owl's eye') appearance.

Testicular torsion accounted for 6.73% in the present study. It was 10.1%, and 19% in studies done by Srinivasan A et al [10] and Reddy et al [2] respectively.

The majority of the cysts with tumor-like appearance are paratesticular, however the testicle may sometimes have cystic lesions that can be confused with a neoplasia. Epididymal cysts and spermatoceles are relatively frequent. The differential diagnosis is related to its size, and content of the cyst. [9]

Cryptorchidism is one of the main risk factors for testicular malignancy. Many authors believe that any form of cryptorchidism at birth, regardless of the outcome should be considered a risk factor for testicular cancer.[11] In our study, cryptorchidism was observed in 19 (18.27%) cases with all being unilateral. Histopathologically, 13 cases showed changes of atrophy whereas 6 cases showed normal histology. None of the case showed intratubular germ cell neoplasia. This finding was consistent with Koni et al [12], Karki et al [13] and Devi et al [4].

Testicular regression syndrome (TRS) or 'vanishing testis' is considered to be due to the atrophy and disappearance of an initially normal testis in fetal life. Presence of spermatic cord structures is the evidence of presence of the testis in early intrauterine life. Grossly, this can be noted as spermatic cord with a small mass of firm, fibrotic tissue at one end. Pirgoan et al [14] and Smith et al [15] in their studies have observed that histologically, the distal expansion of most of the specimens was composed of dense fibrovascular tissue in the absence of normal seminiferous tubules along with scattered foci of calcification and brown pigment. Spires et al [16] studied 11 patients of TRS with an age range of 9 months to 26 years. For pathologic assessment, the authors considered seven parameters- identification of vas deferens, epididymis, dystrophic calcification, hemosiderin, dominant vein, and pampiniform plexus–like vessels and presence of a vascularized fibrous nodule (VFN). In 2 of their cases, they found all the seven parameters while other cases showed 3-6 parameters. We had seven cases of TRS with an age range of 5 to 42 years and histology showed VFN, presence of vas deferens, epididymis, foci of calcification, and hemosiderin pigment.

Testicular tumors are one of the most common malignancies occurring in young adults. [17] Though the etiology of testicular cancers is not well understood, various factors like cryptorchidism, trauma, infections, genetic and endocrine factors appear to play a role in their development. In addition, definite geographic and racial distribution is seen in testicular tumors. The histological pattern as well as the behavior of the tumor differs with age. Germ cell tumors constitute more than 94% of testicular tumors. [8] In a study by Mostofi [18], it was stated that testicular tumors are confined to three age groups i.e. infancy, late adolescence to young adulthood (20 – 35years) and 50 years and above. In the present study, most of the malignant lesions were found in the age group of 21 – 30 years which was similar to results obtained by Deore et al [17] and Patel et al.[3] Out of the total eight neoplasms in this study, 62.5% (five cases) consisted of mixed germ cell tumors with varied combinations of teratoma (mature/ Immature), yolk sac tumour, embryonal carcinoma, seminoma and choriocarcinoma. These findings were similar to those of Karki et al. [13]

In our study, we had three cases of spermatocytic seminoma. It is a rare germ cell tumor, first distinguished from classic seminoma by Masson. [19] It has to be distinguished from classical seminoma, pure embryonal carcinoma and testicular lymphoma.[20-22].

Conclusion

We conclude that testicular tumors have relatively low frequency in comparison with non-neoplastic lesions. Germ cell tumors formed the bulk of testicular tumors, with mixed germ cell tumors being the most common. Generally, any testicular mass in young patients is treated as malignancy, but infectious lesions like acute/chronic or tuberculous epididymoorchitis should be considered before orchidectomy.

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Table no. – 1 Age wise distribution of testicular lesions

Sr. No	Age (Years)	Non-neoplatic lesions		Neoplastic lesions		
		No of cases	Percentage	Malignant neoplasms	Total cases	Percentage
1.	0-10	08	7.69	-	-	-
2.	11-20	09	8.66	02	02	25.0
3.	21-30	14	13.46	03	03	37.5
4.	31-40	13	12.5	01	01	12.5
5.	41-50	20	19.23	-	-	-
6.	51-60	19	18.27	01	01	12.5
7.	61-70	14	13.46	01	01	12.5
8.	71-80	05	4.81	-	-	-
9.	81-90	02	1.92	-	-	-
	Total	104	100	08	08	100

Table no. – 2 Presenting features in testicular lesions

Sr. No	Presenting features	No. Of cases	Percentage
1.	Swelling	57	55.34
2.	Swelling & Pain	20	19.42
3.	Pain	09	8.74
4.	Pain in groin	01	0.97
5.	Pain & UTI	01	0.97
6.	Lower abdominal pain	03	2.91
7.	Empty scrotal sac	09	8.74
8.	Infertility	03	2.91
	Total	103	100

Table no. 3 - Histopathological diagnosis of non-neoplastic testicular lesions

Sr No	Histopathological diagnosis	No of cases	Percentage
1.	Cryptorchid testis	19	18.27
2.	Senile changes	06	5.77
3.	Torsion	07	6.73
4.	Testicular regression syndrome	07	6.73
5.	Congestion	01	0.96
6.	Epididymal cyst	10	9.62
7.	Spermatocele	10	9.62
8.	Mesothelial cyst	01	0.96
9.	Testicular abscess	05	4.81
10	Organising abscess	01	0.96
11.	Acute on chronic non specific epididymo-orchitis with funiculitis	02	1.92
12.	Acute on chronic non specific epididymo-orchitis	18	17.31
13.	Acute non specific epididymo-orchitis	01	0.96
14.	Pyocele with testicular infarction	01	0.96

15.	Chronic non specific epididymo-orchitis	01	0.96
16.	Granulomatous orchitis	02	1.92
17.	Caseating tuberculosis	01	0.96
18.	Xanthogranulomatous epididymoorchitis	03	2.88
19.	Malakoplakia	02	1.92
20.	Complete maturation arrest	02	1.92
21.	Partial maturation arrest	02	1.92
22.	Sertoli cell only syndrome	02	1.92
	Total	104	100

Table no. – 4 Histopathological diagnosis of neoplastic lesions

Sr no	**Histopathological diagnosis**	**No of cases**	**Percentage**
1.	Spermatocytic seminoma	03	37.5
2	Mixed germ cell tumor (Immature teratoma+ Yolk sac tumor+ choriocarcinoma+ Embryonal carcinoma)	01	12.5
3.	Mixed germ cell tumor (Mature teratoma+ Yolk sac tumor+ Embryonal carcinoma)	01	12.5
4.	Mixed germ cell tumor (Immature teratoma+ Yolk sac tumor+ Embryonal carcinoma)	01	12.5
5	Mixed germ cell tumor (Yolk sac tumor+ Embryonal carcinoma)	01	12.5
6	Mixed germ cell tumor (Seminoma+ Immature teratoma+ Yolk sac)	01	12.5
	Total	08	100

Figure legends:

Figure 1: Photomicrograph showing A- Granulomatous orchitis showing granulomas with giant cells (H&E, 10x) B- Xanthogranulomatous orchitis showing presence of foamy histiocytes (H&E, 10x)

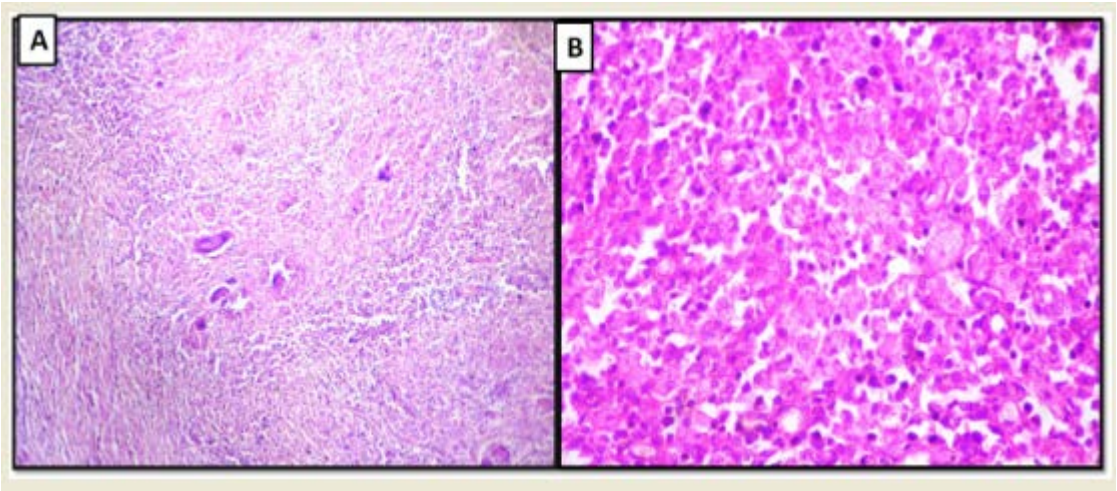

Figure 2: Photomicrograph showing different components of mixed germ cell tumour

A- Teratoma, (H&E, 10x) B- Yolk sac tumour (H&E, 10x), C- Embryonal carcinoma (H&E, 40x), D- Choriocarcinoma (H&E, 10x).