Histopathological Scenario of Testicular Lesions with Few Uncommon Entities – 3 Years Study in a Tertiary Care Hospital

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ABSTRACT

BACKGROUND

The incidence of testicular malignancy has been increasing in men, orchidectomy is necessary for the removal of neoplastic lesions or in patients with chronic inflammatory conditions resistant to treatment. We wanted to evaluate the various histopathological patterns of lesions in testis.

METHODS

A retrospective study of 86 orchidectomy specimens over a period of three years with age wise distribution from March 2017 to February 2020 was done in the Department of Pathology, Guntur Medical College, Guntur. Histopathological slides stained with haematoxylin and eosin were retrieved and reviewed. Immunohistochemistry was done in two cases.

RESULTS

Of the 86 cases, 78 (90.7 %) cases were non neoplastic and 8 (9.3 %) cases were neoplastic. Youngest age in non-neoplastic group was four days and in neoplastic group was 18 years. The oldest age was 82 years in the non-neoplastic lesions and 60 years in the neoplastic lesions. Non neoplastic lesions were common in the 3^{rd} decade. In malignant lesions, highest number of cases was seen in the 6^{th} decade and equal distribution was observed in 3rd and 5th decade. Unilateral involvement was common than bilateral involvement. Out of all non-neoplastic lesions, undescended testis 20 (25.64 %) cases was the common finding followed by non-specific epididymo orchitis 19 (24.36 %) cases, abscess 14 (17.95 %) cases, torsion infarction 13 (16.67 %) cases, Leydig cell hyperplasia 4 (5.13 %) cases, 3 (3.85%) cases each of tuberculous epididymo orchitis and granulomatous epididymo orchitis. 1 (1.28 %) case each of rare entities like vanishing testis and splenogonadal fusion were also found. Among the neoplastic lesions, all 8 cases were malignant tumours. Out of these malignant tumours, mixed germ cell tumours were seen in 3 (37.5 %) cases followed by seminomas 2 (25 %) cases, post pubertal teratoma 1 (12.5 %) case, non-Hodgkin's lymphoma (NHL) 1 (12.5 %) case and primitive neuroectodermal tumour (PNET) 1 (12.5 %) case.

CONCLUSIONS

Histopathological examination on routine haematoxylin and eosin (H&E) stained sections primarily differentiate non neoplastic lesions from neoplastic group and benign tumours from malignant tumours as the treatment modality varies. Immunohistochemistry (IHC) is useful in the diagnosis of poorly differentiated small round cell tumours.

KEYWORDS

Orchidectomy Specimens, Neoplastic and Non-Neoplastic Lesions

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BACKGROUND

Testis or testicle is a paired oval organ that lies within the scrotum suspended by the spermatic cord. Testicular lesions were explained under non neoplastic and neoplastic lesions. Non neoplastic lesions are cryptorchidism, vanishing testis, epididymo orchitis, torsion of testis and splenogonadal fusion.¹ More than 90 - 95 % of all testicular tumours are of germ cell origin. Overall testicular cancer does not constitute more than 1 - 3 % of all malignant tumours in men, but in men between 20 and 34 years of age, it accounts for almost 30 % of all malignant tumours. Orchidectomy is typically performed for the removal of tumour or chronic inflammation, resistant to medical treatment. Castration is commonly performed in patients with prostatic carcinoma to reduce the level of testosterone in the body. Testicular neoplastic lesions are noted as most common neoplasms between 2nd and 4th decades of life.^{2,3} Testicular and para testicular neoplasms are classified into various subgroups by World Health Organization (WHO) in 2004.4 The predisposing risk factors for the development of testicular tumours are cryptorchidism, infertility, Klinefelter's syndrome, family history of testicular tumour in 1st degree relatives, trauma, hormones, etc.⁵

We wanted to evaluate the histopathological patterns of various testicular lesions and to study the distribution of nonneoplastic and neoplastic lesions of testis among different age groups.

METHODS

This was a retrospective study done in Guntur Medical College, Andhra Pradesh, from March 2017 to February 2020. All orchidectomy specimens received in the Department of Pathology were included in the study except orchidectomies performed for patients with prostatic carcinoma. A total of 86 cases were studied. The histopathological slides stained with haematoxylin & eosin were retrieved and reviewed. Two cases were subjected for IHC. Relevant data was collected from the records. The lesions were categorised into non neoplastic and neoplastic groups.

RESULTS

86 cases were included in the study among which majority 78 (90.7 %) of the cases were non neoplastic and 8 (9.3 %) cases were neoplastic lesions. In our study, age wise distribution of non-neoplastic lesions was observed. Youngest patient was 4 days in non-neoplastic group and oldest patient was 82 years. Highest age incidence was found in 3rd decade with 17 (21.79 %) cases followed by 5th and 7th decades constituting 13 (16.67 %) cases each.

In neoplastic group, youngest patient was 18 years of age and oldest was 60 years of age. Overall highest incidence was observed in 6^{th} decade with 3 (37.5 %) cases. Out of 86 cases unilateral involvement was seen in 81 (94.19

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%) cases and bilateral involvement in 5 (5.81 %) cases. Of these all cases of neoplastic lesions are unilateral while none are bilateral. Right sided lesions are more common than left sided lesions. In case of non-neoplastic lesions undescended testis constitute 20 cases with highest percentage (25.64 %). The lowest age group in undescended testis was 3 years and highest age was 70 years. One case of vanishing testis was identified in 9 years old boy with undescended testis. Non-specific epididymo orchitis constitutes 19 (24.36 %) cases with age ranging from 22 to 65 years. 14 (17.95 %) cases of abscess were identified in similar age group as nonspecific epididymo orchitis.

Torsion testis with infarction was found in 13 (16.67 %) cases and the age group involved was in between 4 days and 63 years. 3 (3.85 %) cases each of chronic granulomatis orchitis and tuberculous orchitis were diagnosed. In case of chronic granulomatous orchitis the age range was 35 to 64 years. For tuberculous orchitis the age range was 24 to 38 years. 4 (5.12 %) cases of Leydig cell hyperplasia were identified with age range of 65 to 82 years. 1 (1.3 %) case of splenogonadal fusion (Figure 1) was identified in 14 years old male (Table 1). Of the neoplastic lesions all 8 cases were malignant with germ cell tumours constituting 6 (75 %) cases and 1 (12.5 %) case each of non-Hodgkin's lymphoma and primitive neuro ectodermal tumour. Of the 6 germ cell tumours mixed tumours containing more than 1 germ cell component were 3 (50 %), seminomas 2 (33.33 %) and post pubertal teratoma 1 (16.67 %), (Table 2).

DISCUSSION

Various types of non-neoplastic and neoplastic lesions affect the testis. In our study, right sided lesions were common than left sided lesions which was correlated with other studies.^{6,7,8,9} Non neoplastic lesions constitute 78 (90.7 %) cases which were more common than neoplastic lesions, 8 (9.3 %) cases. These were correlated with studies done by Dr. Mahesh B Patel et al. ⁶ and Annu Charak et al. study.¹⁰



	Age Group								
	0 - 10	11 - 20	21 - 30	31 - 40	41 - 50	51 - 60	Total (%)		
1) Germ cell tumours									
i) Seminoma			1			1	2 (25)		
ii) Teratoma (post pubertal)					1		1 (12.5)		
iii) Mixed germ cell tumours									
a) Embryonal carcinoma + yolk sac + seminoma		1					1 (12.5)		
b) Teratoma+ yolk sac					1		1 (12.5)		
c) Yolk sac + teratoma + seminoma			1				1 (12.5)		
2) NHL						1	1 (12.5)		
3) PNET						1	1 (12.5)		
Total		1	2		2	3	8 (100)		
Percentage	0 %	12.50 %	25 %	0 %	25 %	37.5 %	100 %		
Table 2. Histopathological Diagnosis of									

SI. No.	Testicular lesions	Mahesh B. Patel et al. ⁶	Annu Charak et al. ¹⁰	Manshi Sharma et al. ¹¹	Reddy H et al. ¹²	Gaikwad SL, et al. ¹³	Present study
1	Undescended testis	8.24 %	46.10 %	39.62 %	14 %	15.60 %	25.64 %
2	Torsion infarction testis	55.29 %	15.30 %	18.86 %	22.10 %	12.80 %	16.67 %
3	Testicular abscess	16.47 %	7.60 %	5.66 %	19.76 %	18.70 %	17.95 %
4	Granulomatous orchitis	9.40 %	2.59 %	3.77 %	3.50 %	6.80 %	3.84 %
	Table 3	. Compa	rison of	Histopa	thologic	al Type	5

ot Non-Neoplastic Testicular Lesion:



Most common finding in non-neoplastic lesions in our study is undescended testis (25.64 %) which is lower than Annu Charak et al. study (46.1)¹⁰ and Mansi Sharma et al. study (39.62 %).^{11 I}t is more than Mahesh B Patel et al. study (8.24 %). In the present study undescended testis and torsion testis cases were commonly observed in 2nd and 3rd decades which is comparable with Annu charak et al. study. In our study 4 (5.12 %) cases of Leydig cell hyperplasia were diagnosed which is more than Annu Charak et al. study (1.92 %). In the present study, testicular abscess constitutes (17.95 %) of cases which is close to the Reddy H et al.¹²

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study (19.76 %) and with Gaikwad SL et al.13 study (18.7 %). Tuberculous epididymo-orchitis were 3 (3.84 %) cases out of 78 cases of non-neoplastic lesions which is less than that of Mahesh B Patel et al. study (9.41 %). The mean age was 32.6 which is also less than that of Mahesh B Patel et al. study. 3 (3.85 %) cases of granulomatous orchitis cases were observed with a mean age of 48.33 that is comparable to Grugenberg H et al. study.14 In our study torsion / infarction testis cases were 13 (16.7 %) which is close to the Gaikwad et al. study (12.8 %)¹⁴ (Table 3).

In the present study a rare case of splenogonadal fusion discontinuous type was identified in 14 years boy on left side. In this case ultrasound examination revealed two small masses of 0.5 cm each at the upper pole of left testis in the scrotum. On histopathological examination splenic tissue with a part of epididymis in one slide (Figure 1) and seminiferous tubules in another slide were observed. Splenogonadal fusion is a very rare congenital anomaly in the differential diagnosis of testicular mass and it was first diagnosed by Bostroem in 1883 (Lopes R I).15 In 82 % of cases it occurs in less than 30 years of age (Kharal AB study)¹⁶ one case of vanishing testis was diagnosed in our study, in 9 years boy and constituting 4.76 % of cryptorchidism cases comparable to Spines et al. study.¹⁷

Only 8 cases of tumours were identified, of these 6 (75 %) were germ cell tumours which was correlated with Annu Charak et al. study (73 %). The germ cell tumours occur in between 18 and 60 years with a mean age of 37 years which was also correlated with Preethi Rihal Chakrabarthi et al. study.¹⁸ (32.4 years). In the present study 2 (25 %) cases were seminomas which was less than Friedman and More study¹⁹ (35 %) and other studies.

A (12.5 %) case of post pubertal (adult) teratoma was diagnosed in our study. Post pubertal teratomas of testis are malignant germ cell tumours and have a higher metastasis rate compared to their malignant counter parts in the ovary (Carver BS et ai study).²⁰ Mixed germ cell tumours in our study were 3 (37.5 %) cases which is more than Mahesh B Patel et al. and close to the Preethi Rihal Chakrabarthi et al. study¹⁸ (44.44 %). In the mixed germ cell tumours one case was observed at the age of 18 years with embryonal carcinoma, yolk sac and seminoma components. In the second case the age was 42 years, components were teratoma and yolk sac. The third case with yolk sac, teratoma and seminoma components was observed in 28 years male. In the previous study teratocarcinoma was the commonest type.¹⁸

Primary non-Hodgkin's lymphomas of the testis is an uncommon entity comprising 1 % of all NHL and 9 % of all testicular tumours and majority of the cases were reported in elderly people²¹ (Wang C et al. study). In the present study a (12.5 %) case of NHL (Figure 2) is reported in 58 years male, which was confirmed by IHC. In this case CD3 is negative and CD20 is positive, hence, reported as B cell lymphoma. In our study a (12.5 %) case of primitive neuro ectodermal tumour was diagnosed. This tumour was positive for CD99 and vimentin and negative for EMA. PNET in testis is a rare tumour and only few cases were reported in the review of literature.22,23

CONCLUSIONS

All testicular swellings and masses are not tumours; hence, testicular lesions must be categorised into neoplastic and non-neoplastic lesions. The instance of testicular tumours is low, and the treatment modality varies in different types of tumours. Majority of the tumours are of germ cell origin and for primary diagnosis, histopathological examination on H & E staining technique is useful and it is the gold standard. However, to diagnose non germ cell tumours like NHL and PNET immunohistochemistry technique is essential for confirmation.

Data sharing statement provided by the authors is available with the full text of this article at jebmh.com.

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