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Histopathological spectrum of male genital tract lesions: A retrospective study

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Abstract
Background: The male genital tract consists of a pair of testes, epididymis, vas deferens, ejaculatory duct, accessory sex glands (seminal vesicles, prostate, and bulbourethral glands) and the penis. Incidence of male genital cancer has increased rapidly over the period of time. Keeping in mind the varied histology and equal importance of male genital tract lesions, the present study was done to study the male genital tract lesions in our region.
Materials and Methods: The present study was carried out retrospectively in the department of pathology, GMC Jammu over a period of 1 year which included 96 cases. The data collected included age, sex, clinical history, diagnosis and histopathological findings.
Results: Our study included 96 cases out of which majority were of testis (36;37.5%) followed by prostate (25;26%), penis(18;18.7%), scrotum (13;13.6%) and epididymis (4;4.1%). Neoplastic lesions were 12(12.5%) and non neoplastic lesions were 84 (87.5%) in number. Among the neoplastic lesions adenocarcinoma prostate (7; 7.3%) was the most common and benign hyperplasia of prostate (18;18.7%) was common among the non neoplastic category.
Conclusion: Lesions of male genital tract form a relatively small but important part of pathological practice, so it is necessary to thoroughly investigate the patient for correct diagnosis and management of the patient.

Keywords: Non neoplastic, prostate, testis, histopathology

Introduction
The male genital tract consists of a pair of testes, epididymis, vas deferens, ejaculatory duct, accessory sex glands (seminal vesicles, prostate, and bulbourethral glands) and the penis which are under the control of hormones from hypothalamus, pituitary, and gonads. Testes is an organ where the continuous process of gamete production (spermatogenesis) occurs and where testosterone is produced. Epididymus is an excurrent duct system for transport, maturation, and storage of the sperm. Accessory glandular organs produce seminal fluid and secrete complex molecules into the final ejaculate. Penis, an erectile organ for the penetration and delivery of the gametes into the female reproductive tract. Production, release and maturation of spermatozoa all depend on specialized functions of the testicular cells and epididymal epithelium. An equally varied morphology and ultrastructural composition reflect these varied functions. Ailments of the reproductive organs are common through the whole life span of a man. Distinct pathological conditions affect various components of male genital tract. Their incidence has continuously increased during the last decades, especially in the developed countries. They constitute a group of lesions which are difficult to detect and treat because of their anatomical locations, biological behaviour as well as their consequences [1]. While some are malignant, others pursue a benign course. Undescended testes (cryptorchidism) and hypospadias, abnormally located urethral orifices along the ventral side of the penis, represent the two most common congenital malformations of new-born boys, affecting 2-4% and 0.3-0.7%, respectively. In 20-40 years old men, testicular germ cell tumours are the most common neoplasm, whereas prostate cancer is the overall leading cancer in older men. In addition, in the western societies as many as 15% of all couples experience infertility problems and rough estimates indicate a sole or contributory male cause in at least 50% of the cases [2].
Tumours and tumour-like lesions of male genital tract constitute major public health problem in many countries of the world.

Incidence of male genital cancer has increased rapidly over the period of time. They are histologically diverse. Each site has its own dominant histological type as follows: prostate cancer adenocarcinomas, testicular cancer- germ cell tumors, penile and scrotal cancer- epidermoid carcinomas and spermatic cord cancers-sarcomas [3].

Malignancies of these organs form a small group of total male cancers but geographically present with important variations. The male genital tract tumors emerged as a new cancer in 2011 with a incidence of 3.49% and drops down to 2.94% in 2016 [4]. Keeping in mind the varied histology and equal importance of male genital tract lesions, the present study was done to study the male genital tract lesions in our region.

Materials and Methods

The present study was carried out retrospectively in the department of pathology, GMC Jammu over a period of 1 year. It included 96 cases of lesions of male genital tract. The data was retrieved from the records maintained in the department which included age, sex, clinical history, diagnosis nd histopathological findings based on microscopic examination of H & E stained paraffin embedded sections.

Results

Our study included 96 cases out of which majority were of testis (36; 37.5%) followed by prostate (25;26%), penis (18;18.7%), scrotum (13;13.6%) and epididymis (4;4.1%). Neoplastic lesions were 12(12.5%) and non neoplastic lesions were 84 (87.5%) in number. Among the neoplastic lesions adenocarcinoma prostate (7; 7.3%) was the most common and benign hyperplasia of prostate (18;18.7%) was common among the non neoplastic category.

Table 1: Prostate Lesions

Prostate	Number of Cases	Percentage
Adenocarcinoma prostate	7	7.3
BHP	18	18.7
TOTAL	25	26.0

There were 25 cases of prostate out of which 7 were malignant (adenocarcinoma) and 18 were benign that included cases of benign hyperplasia of prostate.

Table 2: Testicular Lesions

Testis	Number Of Cases	Percentage
Undescended testis	11	11.4
Testicular atrophy	8	8.3
Testicular torsion	10	10.4
Testicular abscess	3	3.1
Teratoma	1	1.0
Seminoma testis	2	2.1
Yolk sac tumor	1	1.0
Total	36	37.5

Testicular lesions were 36 in number. 4 were malignant which included cases of teratoma (1), seminoma (2) and yolk sac tumor (1). Other cases include undescended testis (11), testicular atrophy (8), testicular torsion (10) and testicular abscess (3).

Table 3: Penile Lesions

Penis	Number Of Cases	Percentage
Phimosis	10	10.4
Fourniers gangrene	7	7.3
Squamous cell carcinoma penis	1	1.0
Total	18	18.7

18 cases were of penis. 1 was malignant (squamous cell carcinoma). Other cases were of phimosis (10) and fourniers gangrene (7).

Table 4: Scrotal Lesions

Scrotum	Number of Cases	Percentage
Hydrocoele	7	7.3
Varicocele	2	2.1
Idiopathic calcinosis	2	2.1
Epidermal inclusion cyst	2	2.1
Total	13	13.6

13 cases were of scrotum including cases of hydrocoele(7), varicocele (2), idiopathic calcinosis (2) and epidermal inclusion cyst(2).

Table 5: Epididymal Lesions

Epididymis	Number Of Cases	Percentage
Epididymal cyst	3	3.1
Filariasis epididymis	1	1.0
Total	4	4.1

Epididymal lesions were 4 in number which includes 3 cases of epididymal cyst and 1 case of filariasis.

Table 6: Spectrum of Male Genital Tract Lesions Along With Age Distribution

Lesions	0-15 yrs	16-30 yrs	31-45 yrs	46-60 yrs	>60 yrs	Total
Adenocarcinoma prostate					7	7
BHP				2	16	18
Undescended testis	7	4				11
Testicular atrophy	3	2	1	1	1	8
Testicular torsion	3	6			1	10
Testicular abscess		1	2			3
Teratoma	1					1
Seminoma testis		2				2

Yolk sac tumor	1					1
Phimosis	4	3		2	1	10
Fourniers gangrene		2	1	1	3	7
Squamous cell carcinoma penis				1		1
Hydrocoele	2		4		1	7
Varicocele			1		1	2
Idiopathic calcinosis		2				2
Epidermal inclusion cyst		2				2
Epididymal cyst		1		1	1	3
Filariasis epididymis			1			1
Total	21	25	10	8	32	96

Age range was from 1-80 years. Maximum number of cases were seen in the age group of >60 years (32;33.3%). In the age group of <15 years maximum cases were of undescended testis. In the age group of 16-30 years maximum cases were of testicular torsion. In the age group of 31-45 years maximum cases were of hydrocoele.

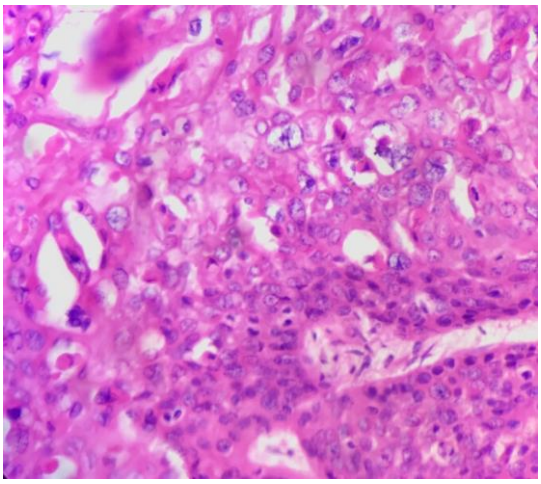

Fig 1: Squamous cell carcinoma Penis (H&E stain, 40x)

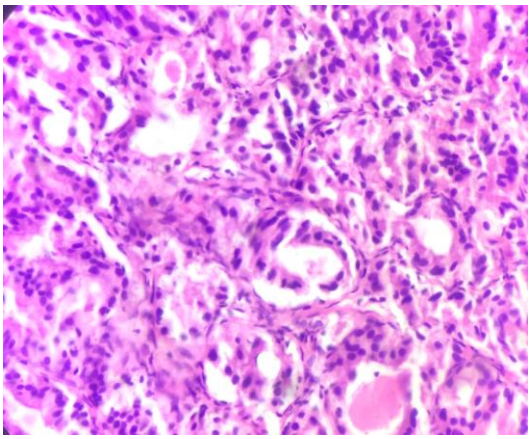

Fig 2: Adenocarcinoma Prostate (H&E stain, 40x)

Discussion

In the present study the age range was between 1-80 years. Similarly, in the study conducted by Fukatsu *et al*. the patients ranged in age from 1 to76 years old [5]. In our study the maximum number of cases are in the age group>60 years which includes 32 (33.3%) cases. In the study conducted by Fukatsu *et al*, maximum number of cases of male genital tract lesions were diagnosed in 19-32 years age group and in the study done by Shafiq *et al* most of the tumors were diagnosed in the third and fourth decade of life [5, 6].

When age was taken into account considering the neoplastic lesions of testis, seminoma was the predominant tumor in the age group of 16-30 years in our study. Fukatsu *et al*. [5] reported seminoma in the age group between 25-44 years and Damjanov I *et al*. [7] reported it in the age group between 30-50 years. In our study prostatic cancer were seen in the age group >60 years and penile cancer in the 6th decade. This is similar to study by Taneja D *et al*. [3].

The present study found that prostatic tumors were the most common tumors (58.3%) among male genital tract malignancies followed by testicular tumors and penile cancer. Takiar R and Kumar S [8] also found prostatic tumors (77.6%) to be the most common followed by penile cancers (11.6%) and testicular tumors (10.5%).

Non neoplastic lesions (87.5%) were more common in our study which is similar to the study conducted by Verma *et al*. [9].

In our study the non-neoplastic testicular lesions were more common than the neoplastic lesions (88.8 vs 11.1%). This is similar to the study by Reddy H *et al* [10] (86 vs 14%) and Patel MB *et al*[11] (85 vs 15%) but doesn't correlate with Robertson GS *et al*[12] (31.5 vs 68.4%). As cited above, testicular tumors were less frequent in the present study. We found only 4 cases amounting to 4.1% of the total cases. Incidence of testicular tumors varies from country to country and place to place thus pointing to various causative factors [13]. Our 100% cases of testicular neoplasms were germ cell tumours only. No sex cord stromal tumour, lymphoma or metastasis were reported. As per Mostofi FK and Price EB [14], germ cell tumors constitute more than 94% and stromal tumors consist of 3% of testicular tumors.

The histological pattern and behaviour of the testicular tumors differs with age. Though the incidence of testicular tumor is low, it is one of the most common malignancies occurring in young adults. Testicular neoplasm of germ cell origin is the most common malignancy in men aged between 18-35 years [15]. All our cases were also found in men younger than 40. Non seminomatous tumors are known to present in younger age than seminomatous type [16]. We had similar findings as we found one pure seminoma in 3rd decade; one yolk sac tumour and one immature teratoma in 1st decade respectively. Cryptorchidism is the single most important risk factor associated with testicular cancer with 10% of all testicular cancer patients having history of cryptorchidism [17]. Although we found 11 cases of undescended testis, none of them showed neoplastic focus and also none of the 4 cases of testicular neoplasms had history of undescended testis. Our finding is in concordance with Reddy H *et al*. [10].

In the present study, malignant tumours of the testis

constituted 33.3% of all the malignant tumors of male genital tract. Moghe KV *et al.* [18] observed a lower frequency of 10.7%. Nagpal BL *et al.* [19] reported a frequency of 15%.

In the present study, a total of 7 malignant tumors of the prostate were observed. They constituted 58.3% of all the malignant tumors of male genital tract observed. Takiar R and Kumar S [8] reported 77.6% and Rao GR *et al.* [20] reported 21.6% cases of carcinoma prostate among all the malignant tumors of male genital tract. 45.5% cases of carcinoma prostate were reported by E.L Kassaby SM *et al.* [21].

Among penile lesions we observed only 1 case of malignant neoplasm of the penis. It constituted 8.3% of all male genital tract malignancies.A study by Takiar R and Kumar S [8]showed a frequency of 11.6% cases of penile cancers among male genital tract malignancies. Nagpal *et al.* [19] reported a frequency of malignant tumours of penis at 42.4%. The case of penile cancer reported by us was squamous cell carcinoma. A study over a period of 18 years in Amritsar reported squamous cell carcinoma in 100% cases of penile cancers [22]. Novak *et al.* [23] found squamous cell carcinoma in 91% cases.

Conclusion

Testicular lesions outnumbered all other lesions of male genital tract followed by prostatic lesions and lesions of penis. Majority of the lesions of the testis were more common in the younger age group and prostatic lesions in elderly age group. Non-neoplastic lesions were more common than neoplastic lesions. Lesions of male genital tract form a relatively small but important part of pathological practice, so it is necessary to thoroughly investigate the patient for correct diagnosis and management of the patient.

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