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Clinicopathological Study of Orchidectomy Specimen

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ABSTRACT

The present study was a five years descriptive type of study. In this five years study period June 2012 to May 2017, a total number of 62 surgically removed specimens of testing were received in the Department of Pathology of Krishna Institute of Medical sciences and research centre, Karad for histopathological examination. All orchidectomy specimens received from the surgery department in the period of June 2015 to May 2017. Archival data of cases were studied from June 2012. For prospective cases detail record brief clinical history with age, registration number, biopsy number, presenting signs & symptoms were noted, required serum marker assay for Alpha-fetoprotein, Human chorionic gonadotropin and Lactate dehydrogenase were noted wherever possible. The gross specimens received, they were fixed in 10% neutral buffered formalin/ Bouin's solution for overnight fixation. In the present study, the maximum number of cases involving the right side of testis. In this study, Germ cell tumours were the commonest found neoplastic lesion comprising of 16 cases that are 88% of all neoplastic lesions. Most common germ cell tumour in our study was seminoma. In seminoma, the most common age group was found to be in the 3rd and 4th decade. The present study shows one NHL case in 69 years old patient.

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INTRODUCTION

The testis is a male gonad, it is homologous with the ovary of the female genital system and it is a unique and important organ of the male reproductive system. The testis is a paired oval organ that lies within scrotum suspended by the spermatic cord. Orchidectomy is the term that is used for the procedure of surgical removal of one or both test (Juan, 2011). There are various testicular lesions, ranging from paediatric to adult age groups. They usually present with scrotal swelling, pain and mass per abdomen (Reddy *et al.*, 2016). Clinically the diagnosis of testicular tumours is delayed in many cases. The urologists, the radiologists and chemotherapist are eventually dependent upon histological diagnosis of tumour and tumour-like lesions as histopathological features have a major stake in determining the prognosis and therapeutic option (Sanjay and Sushma, 2016). India is one of the most populous countries in the world; the incidence of both neoplasic and non-neoplastic orchidectomy lesions is rising. There are separate studies done on clinical presentation and histopathological features.

A study taking into consideration, clinical features, histopathological features and serolical tumour markers will prove productive. Overall view of the clinical and histopathological presentation of such cases will help us in finding the risk factors in our care centre, which in turn will be helpful for early diagnosis and proper treatment.

Aim

To study the clinicopathology of orchidectomy specimens.

Objectives

To study various clinical and histopathological patterns of non-neoplastic and neoplastic lesions of the testis. To study serological tumour markers wherever possible.

Review of Literature

Orchidectomy is the term that is used for the procedure of surgical removal of one or both testis. It may be indicated for diseases of the testis both benign and malignant or injury to the testis or to control cancer of the prostate by removing a source of androgenic hormones. In a study conducted pooling data from cancer incidence in five continents, a wide global discrepancy in testicular cancer incidence rates was seen with the disease seen predominantly in Northern European populations and low incidences in Indian and Chinese men (Chia *et al.*, 1973). Orchiectomy comes from the Greek word 'orchis' means testis, and 'ektome' means excision and is referred to, alternatively, as orchidectomy, orchectomy, or testectomy, and consists of the removal of one or both testis.

A temperature about 2-3^{o}C below the core body temperature is required for the normal sperm production by the testis and this lower temperature in the testis is maintained and regulated as the testis are present in the scrotum which is located outside the pelvic body, the testis temperature is maintained at a lower level in comparison to the body. The contractions of the scrotal muscle fibres also help to regulate the temperature to a lower degree. This is done with the help of the cremaster (suspender) muscle. The dartos muscle contracts in response to cold and relaxes in response to warmth. Thus, the muscle elevates the testis upon exposure to cold and also during sexual arousal resulting in moving the testis closer to the pelvic cavity, where they can absorb heat from the body. The process is reversed on exposure to warmth or during hot weather to move the testis away from the pelvic cavity and away from the body heat. These muscular reflexes in the testis help to regulate its temperature. A venous pampiniform plexus surrounding the testicular artery acts as a thermo-regulatory device for pre-cooling arterial blood. All these mechanisms maintain the testis temperature 2-3oC below the core body temperature that is conducive to spermatogenesis. The skin of scrotum tends to rich with large apocrine sweat glands. (Jain, 2012) Testicular pain has got many causes they are trauma, Testicular torsion (surgical emergency condition), Orchitis (inflammation of the testicle), hypogonadism and finally testicular tumour (Chia *et al.*, 1973). Granulomatous orchitis is a rare condition, the precise etiology of which is unknown. Trauma, an autoimmune reaction to sperms and urinary tract infection, has been postulated. The differential diagnosis of non-caseating granulomas mainly includes sarcoidosis and granulomatous orchitis. But granulomas in sarcoidosis are seen in the interstitium. The restriction of granulomas to seminiferous tubules is a characteristic feature of granulomatous orchitis. The tuberculous infections always involve the epididymis and secondarily involve the testis (Chia *et al.*, 1973; Brunson *et al.*, 2000).

In the present study, maximum numbers of non-neoplastic lesions are found in 50–60 years of age group, while neoplastic lesions are seen in 30-40 years of age group. These findings are correlated with the study done by Hemavati Reddy et al. (2016)[2]. A most common malignant lesion in the present study is seminoma. In seminoma, most common age group was found to be in 30-40 years of age group as given by Mostofi and Price (1973) our study shows concordance with this study.

MATERIALS AND METHODS

The present study was a five years descriptive type of study. In this five years study period June 2012 to May 2017, a total number of 62 surgically removed specimens of testies were received in the Department of Pathology of Krishna Institute of Medical sciences and research centre, Karad for histopathological examination. All orchidectomy specimens received from the surgery department in the period of June 2015 to May 2017. Archival data of cases were studied from June 2012. For prospective cases detail record brief clinical history with age, registration number, biopsy number, presenting signs & symptoms were noted, required serum marker assay for Alpha-fetoprotein, Human chorionic gonadotropin and Lactate dehydrogenase were noted wherever possible. The gross specimens received, they were fixed in 10% neutral buffered formalin/ Bouin's solution for overnight fixation.

Observations and Results

In the five years of study period June 2012 to May 2017, a total number of 62 surgically removed specimens of testis were received in the Department of Pathology of our institute for histopathological examination. Table 1 shows that, out of these 62 cases, 44 cases were non-neoplastic, while 18 cases were neoplastic.

Table 1: Typesof testicular lesions

Type		Number of cases	percentage
Non-neoplastic		44	71%
	Neoplastic		
	Benign	01	02%
	Malignant	17	27%
Total		62	100%

Table 2: Laterality of testicular lesions

Laterality	Number of cases	Percentage
Right	31	50%
Left	27	43.5%
Bilateral	04	6.5%
Total	62	100%

Table 3: Clinical presentations of patients with testicular lesions

Sr.No	Clinical presentations	Number of cases	Percentage
1	Testicular Swelling	26	42%
2	Acute Testicular Pain	16	26%
3	Undescended testis	05	08%
4	Lower abdominal lump	08	13%
5	Bilateral limb cellulitis with testicular swelling	01	02%
6	Growth over Penis	02	03%
7	Increased frequency and dribbling micturation	04	06%
	Total	62	100%

Table 4: Age-wise distribution of all testicular lesions

Sr.No	Age groups	No of cases	Percentage
1	0-10 Years	02	3.2%
2	11-20 Years	08	13%
3	21-30 Years	07	11.3%
4	31-40 Years	15	24%
5	41-50 Years	05	08%
6	51-60 Years	13	21%
7	61-70 Years	07	11%
8	>70 Years	05	08%
	Total	62	100%

Table 5: Outcome of patients

Outcome	Number of cases	Percentage
Improved	55	87.5%
Expired	04	07%
Status Unknown	03	05.5%

Out of 18 neoplastic cases, only one was of benign origin while 17 cases were malignant. Out of 62 cases, most commonly found lesions were non-neoplastic lesion which composed of 44 cases, i.e. (71%), while neoplastic had 18 cases comprising 29%.

Table 2 shows that out of 62 cases of testicular lesions studied, maximum cases were unilateral and only 4 (6.5%) cases were bilateral. In these remaining 58 cases, right testicular involvement was in 31 (50%) cases while left testicular involvement was in 27 (43.5%) cases. All bilateral cases were in non-neoplastic lesions group. All neoplastic lesions were unilateral.

Table 3 shows that out of 62 cases, 17 patients presented with testicular mass, i.e. (27%) followed by acute testicular pain in about 16 cases (26%). Out of 62 cases, only 1 case (2%) presented with bilateral limb cellulitis with testicular swelling.

In Table 4, patient's age ranges from 7- 92 years both in neoplastic and non-neoplastic cases. This study population was broadly classified as per the following age groups. A maximum number of patients were presented in 30-40 years of age group, i.e. 15 (24%) cases while second highest was seen in 51-60 years of age group with 13 (21%) cases. The Youngest patient of our study was seven years old child presented with left side torsion testis and the oldest patient was of 92 years old age presented with left testicular orchitis.

As shown in Table 5, all of the patients were regularly followed-up for its clinical details and disease progress. As we have three outside laboratory cases outcome of them was not commented as detail data was not available. Maximum, i.e. 55 out of 62 cases improved while 04 out of 62 cases expired. Out of these 04 cases, two were neoplastic cases, one of which was mixed germ cell tumour in 29 years old patient and yolk sac tumour in 9 years old patient while other two non-neoplastic cases included 23 years old known cases of carcinoma penis diagnosed as moderately differentiated SCC - Penis with right-sided hydrocele and unremarkable testis and another case of 65 years old known cases of carcinoma prostate.

DISCUSSION

Tumours and tumour like lesions of testis have fascinated the pathologists and clinicians alike since initial description over a century ago. Clinically it is extremely difficult to draw a rigid line between tumours and tumour like lesions which are benign in nature. As most of them simulate testicular tumour, orchidectomy becomes a surgery of choice. India is one of the most populous countries in the world, the incidence of both neoplastic and non-neoplastic orchidectomy lesions is rising about 15.92%, also in western countries incidence of testicular tumour is on a rising trend in last 50 years.

Even though testicular tumours are relatively rare, are of great interest and importance because of their varied histological appearance and diverse or even conflict views held regarding their histogenesis. As we have studied that they account for 1% of all malignancies worldwide, the testicular neoplasm is 4th most common cause of death from neoplasia in younger male, usually found in the age group 15 to 40 years. (Yeole and Jussawalla, 1997)

The urologists, the radiologists and chemotherapist are eventually dependent upon histological diagnosis of tumour and tumour-like lesions as histopathological features have a major stake in determining the prognosis and therapeutic option. Ultrasonographically also it is difficult to differentiate between tumours and tumour like lesions of the testis, so histopathology remains a gold standard for the diagnosis. Clinically the diagnosis of a testicular tumour is delayed in many cases. Despite new techniques in imaging and tumour marker assays, the diagnosis of testicular lesions is primarily dependent upon histopathological examination. There are several separate studies done on clinical presentation and histopathological features.

This study is taking into consideration, age, clinical features, non-neoplastic and neoplastic lesions, histopathological type and features of the tumour and their outcome. The present study was a five years study within the study period of June 2012 to May 2017, in this study period a total number of 62 surgically removed specimens of testis were received in the Department of Pathology of our institute for histopathological examination.

CONCLUSIONS

We concluded that the majority of the testicular lesions were non-neoplastic. Non-neoplastic lesions were more common in 51-60 years of age group while neoplastic were common in 31-40 years of age group. The present study fairly provides an insight into the clinical presentations, prevalence and patterns of testicular tumours. Testicular swelling was a main clinical complaint and right-sided testicular involvement was common. Out of all non-neoplastic cases, testicular torsion was predominant finding. Neoplastic testicular cases showed a varied histomorphology. Germ cell tumours formed the bulk of testicular tumours. Among tumours, seminoma was

the commonest neoplasm.

Conflict of Interest

The authors declare that they have no conflict of interest for this study.

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