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Clinicopathological study of prostate lesions-A one year study

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ABSTRACT

In Prostate, benign as well as malignant conditions are seen frequently with advancing age. By this study we aim to analyse the various lesions in patients presenting to our rural hospital. Total of 88 specimens were studied from October 2014 to September 2015. Lesions were graded into inflammatory, infectious, benign and malignant lesions. PSA levels were correlated wherever available. Gleason grading was used to grade all adenocarcinoma. 72 cases of TURP specimen, 06 cases & 10 cases of prostatectomies & needle biopsies respectively were found. Most common age was 6th-8thdecade. Most common complaints were urgency and difficulty in voiding. PSA levels were normal in 23 cases, others showed variable increase. BPH constituted majority of the cases, 45(51%) with 28(31.81%) of PIN, 10 (11.36%) of adenocarcinoma, 2 of granulomatous & ANH & 1 of Xanthogranulomatous prostatitis. BPH was most commonly encountered lesion followed by PIN and adenocarcinoma. PSA levels are not specific for prostate cancer as they can be alleviated in various other conditions. The degree of elevation of PSA along with clinical correlation can aid in diagnosis.

Keywords: Prostatitis, adenocarcinoma, Prostatic intraepithelial neoplasia

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INTRODUCTION

Prostatism and geriatric population go hand in hand. Being hormone (androgen) dependent, an array of lesions comprising of both benign as well as malignant lesions are seen affecting this population. Any amount of prostate enlargement has direct effect on urinary system. Benign prostatic hyperplasia and carcinoma prostate are the two most frequent conditions associated with advancing age [1]. A combination of digital rectal examination , trans rectal ultrasonogram and needle biopsy can prove to be a powerful diagnostic tool in the routine diagnosis of benign and malignant prostatic lesions.

Hereditary factors, diets rich in red meat, poor in fruits and vegetables are more commonly associated with prostatic carcinoma [2]. PSA is an important tumour marker for prostate cancer [3]. Its level in blood can also increase in a various setting such as bacterial infection and inflammation. However, higher the PSA level more is the chance of it being malignant.

Aim and Objectives

1)To study the various lesions encountered in all prostate specimen received.
2) Clinicopathological correlation of all the cases with correlation of morphological type with serum PSA level wherever possible.

MATERIALS AND METHODS

A retrospective study of all the prostate specimens received at the department of Pathology, Krishna Institute of Medical Sciences, Karad, Satara, Maharashtra was carried from October 2014 to September 2015. A total of 88 cases were obtained. All the samples were fixed in 10 % formalin, processed, embedded in paraffin wax and sections were obtained of 4-5mu thickness which were stained with Haematoxylin and Eosin (H&E). The light

microscopy diagnosis, serum PSA level and clinical data were used in aiding to the final diagnosis. Gleason's grading was used to grade the adenocarcinoma.

RESULTS

Benign lesions were more common compared to malignancies. Of the 88 cases, 78 (88.6%) cases were benign, including severe dysplasia whereas 10 (11.3%) cases were malignant. Benign prostatic hyperplasia was the most common encountered histopathological diagnosis seen in 45 (51.13%) cases. Among 45 cases of benign prostatic hyperplasia, 30 cases also had chronic non specific prostatitis. 15 (17%) cases of high grade PIN and 13 (14.7%) cases of low grade PIN, 2 (2.27%) case of granulomatous prostatitis, 2 (2.27%) cases of atypical adenomatoid hyperplasia, 1 (1.13%) case of xanthogranulomatous prostatitis were noted. All malignant cases were of adenocarcinoma of prostate.

The mean age of patients with prostatic pathology was 71.3 years [Table 1]. Benign prostatic hyperplasia was most commonly found in 6^{th}- 8^{th} decade. Prostatic intraepithelial neoplasia (PIN) was most commonly encountered in 6^{th}- 7^{th} decade. Adenocarcinoma was most commonly found in 6^{th}- 8^{th} decade of life.

Table 1. Final histopathological diagnosis of the cases

Diagnosis	Number of cases
Benign prostatic hyperplasia	45
Low grade PIN	13
High grade PIN	15
Xanthogranulomatous prostatitis	02
Granulomatous prostatitis	01
Atypical adenomatoid hyperplasia	02
Adenocarcinoma of prostate	10
Total	88

Urgency followed by difficulty in voiding were the most common symptoms encountered in benign prostatic hyperplasia (BPH) and prostatic intraepithelial neoplasia (PIN) patients. Dysuria was the most commonly encountered symptom in malignant cases. However, other symptoms such as incomplete voiding, poor stream were also noted [Table 2].

Table 2. Clinical presentation of Prostatic lesions

Clinical symptoms	Benign (n = 78)	Malignant (n =10)	Total (n =82)
Frequency	04	01	05
Nocturia	02	01	03
Urgency	38	00	38
Difficulty in voiding	12	01	13
Poor stream	02	00	02
Hesistancy	04	01	05
Incomplete voiding	08	00	08
Acute retention	06	00	06
Dysuria	02	06	08

Serum Prostate specific antigen (PSA) level were available in only 65 (73.8%) cases. 23 (35%) cases out of which 19 (63.3%) being BPH and 4 (16%) being PIN showed normal PSA level. 11 (44%) cases of Prostatic intraepithelial neoplasia (PIN) showed PIN more than 15 ng/ml, while 7 (28%) cases of PIN showed level in the range of 10.1 to 15 ng/ml [Table 3].

Table 3. Serum PSA level in the cases studied

PSA range Ng/ml	Benign prostatic hyperplasia	PIN	Adenocarcinoma of prostate	Total
0-5	19	04	00	23
5.1-10	09	03	00	12
10.1-15	02	07	00	09
15.1-20	00	05	01	10
>25	00	06	09	11

10 malignant cases comprising of 11.36% of cases studied showed PSA levels >25 ng/ml. The most common Gleason's score was found to be 9 seen in 3 (30%) cases followed by Gleason's score of 8 seen in 2 (20%) cases and rest of the cases had Gleason's score ranging from 3 to 10[Table 4].

Table 4. Incidence of the prostatic adenocarcinoma with reference of Gleason's score

Gleason pattern	Number of cases
1	0
2	0
3	1
4	1
5	0
6	1
7	1
8	2
9	3
10	1
Total	10

DISCUSSION

The prostate is the largest accessory reproductive organ in males. It being an exocrine gland, majority of the seminal fluid is derived from here. Owing to its strategic location at the bladder neck, urinary obstruction is one of the major and most common symptoms in lesions related to it [4]. The various lesions include benign prostatic hyperplasia (BPH) and carcinoma show an increasing trend with an increasing age. Inflammatory, infectious, benign and malignant lesions of the prostate should be diagnosed accurately as the treatment of each varies significantly.

The incidence of prostate pathologies more specifically BPH and adenocarcinoma is increasing in India owing to westernisation in culture. Hence, the need of better understanding of these conditions. Nowadays, various modalities of treatment include hormonal therapy, surgical excision in the form of TURP or prostatectomies have gained more weightage. For diagnosis, prostatic biopsy (needle core biopsy) is a routinely followed modality. In our study, prostatic chips from TURP procedure comprised the majority of samples received i.e 72 (81.8%) followed by needle core biopsies 10 (11.36%) and 6 (6.81%) enbloc removal of prostate [Table 5]. According to the literature Chandanwale Shirish, P. et.al, TURP is the most commonly performed procedure whereas enbloc removal is least commonly observed procedure in India [5].

Table 5. Procedure table of the various prostatic lesions

TURP specimen	Needle biopsies specimen	Prostatectomy specimen
72	10	06

In our study, most common benign lesion encountered was benign prostatic hyperplasia (BPH), with 45 (51.36%) cases followed by High grade PIN seen in 15 (17%) cases followed by low grade PIN 13 (14.7%) , 2 (2.3%) case of granulomatous prostatitis, 2 (2.3%) case of atypical adenomatoid hyperplasia and single case of xanthogranulomatous prostatitis.[Table 1]. The most common age group affected by BPH was 6^{th}- 8^{th} decade. High grade PIN was noted between 65 to 75 age group and low grade PIN in 6^{th} decade. Prostatitis was seen in 6^{th} decade. We had 2 cases of atypical adenomatoid hyperplasia which were seen in the 6^{th} decade. We had 10 cases of malignancy of the prostate, all of which were adenocarcinoma. The age group most commonly affected was 6^{th} decade. However another peak was seen in 8^{th} decade [Table 6]. According to Chukwuemeka Charles Nwafor, et.al the most commonly affected age group is 6^{th}-8^{th} decade which shows our study in concordance [6-8].

Table 6. Age incidence of the various prostatic lesions

Age in years	BPH	Low grade PIN	High grade PIN	Xanthogranulomatous prostatitis	Granulomatous prostatitis	Carcinoma	Atypical Adenomatoid Hyperplasia
50-55	02	00	00	00	01	00	00
56-60	03	02	02	00	00	00	00
61-65	07	03	01	01	01	02	00
66-70	05	05	03	00	00	02	02
71-75	10	01	05	00	00	01	00
76-80	09	02	03	00	00	02	00
81-85	07	00	00	00	00	02	00
> 85	02	00	01	00	00	01	00

According to literature benign lesions more frequently presented with obstructive symptoms whereas malignant lesions present with irritative symptoms like dysuria, incomplete voiding and frequency [9]. Majority of our patients who had benign lesions such as benign prostatic hyperplasia (BPH) and prostatitis presented with obstructive symptoms such as dribbling, difficulty in voiding and urgency. Of which the latter two were most common

symptoms [Table 2]. We had 2 cases of atypical adenomatoid hyperplasia, diagnosis of which was made by visualisation of intact basement membrane and cellular features. High grade PIN has more likelihood of conversion to adenocarcinoma, as was seen in the incidence of high grade PIN in our study.

Majority of the benign lesions had prostate specific antigen (PSA) levels < 5 ng/ml [Table 3]. However majority of the cases of high grade PIN and almost all cases of adenocarcinoma showed prostate specific antigen (PSA) levels > 20 ng/ml indicating significant association of serum prostate specific antigen (PSA) level with dysplasia in prostate. Normal prostate specific antigen (PSA) level is 0-4 ng/ml [10]. Prostate specific antigen (PSA) is the best marker for adenocarcinoma and for patients who present with obstructive symptoms and have nodules on digital rectal examination [11]. Though generally it is considered that very high prostate specific antigen (PSA) level is diagnostic of malignancy, Cases have also been reported in which the serum PSA level were within normal limits, but were diagnosed as malignancies. Modest elevation of PSA is seen in reactive and BPH of the prostate [9]. PSA is highly sensitive but having low specificity [12].

The Gleason's microscopy grading of prostatic adenocarcinoma was adopted of which the most common score was 9 followed by Gleason's score of 8. Establishing or ruling out the diagnosis of prostatic adenocarcinoma has always been a challenge to pathologists [13,14]. Smaller biopsy size, associated inflammatory reaction, non uniformity of serum prostate specific antigen (PSA) levels are few of the reasons behind the dilemma in giving a definitive carcinoma diagnosis.

CONCLUSION

Prostate is one of the most commonly affected organ in the males associated with significant morbidity. Though benign lesions mostly comprised of benign prostatic hyperplasia (BPH) are most commonly encountered, the morbidity associated with this has lead to increased awareness regarding treatment protocols. Prostatic adenocarcinoma is showing an increasing trend in India. Hence, the need to understand better the tumour biology and behaviour. Serum PSA is an useful adjunct in cases where the values are higher. However, it does not attain a diagnostic status due to its low specificity and high sensitivity.

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