Histopathological Study of Prostatic Lesions

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Abstract:

Background: Prostatic disease is responsible for significant morbidity and mortality in men throughout the world. Prostate cancer and benign prostatic hyperplasia are the two major prostate diseases that increase with aging. Histopathological examination of prostatic lesions has been gold standard for the final diagnosis. **Objective:** This study was carried out for histopathological evaluation of prostatic lesion and its correlation with the clinical data. **Materials and Methods:** This study included all types of prostatic specimens received in department of Pathology, AMC MET Medical College, Ahmedabad from January 2018 to December 2018**.** Relevant clinical data was recorded. **Results:** The most common age group presenting with prostatic lesion was 60-69 years and the most common presenting clinical symptom was difficulty in micturation. The frequency of benign and malignant lesions was observed to be 91% and 9% respectively. Amongst the benign lesions all lesions were Benign Prostatic Hyperplasia **(**BPH) with or without associated pathological lesions. All the malignant lesions were adenocarcinoma of prostate and were graded according to Gleasons scoring system. Predominant malignant lesions (40%) revealed Gleasons score 9. Strong correlation of S.PSA level with prostatic adenocarcinoma was seen in our study **Conclusion:** Histopathological evaluation seems to be gold standard for diagnosis, prognosis and management of prostatic lesions. S.PSA level has strong correlation with the risk and outcome of prostatic cancer.

Keywords: Prostate,Benign Prostatic Hyperplasia (BPH), Adenocarcinoma, Histopathology, S.PSA (Prostate Specific Antigen)

INTRODUCTION:

The prostate gland is the largest accessory reproductive organ in male. It secretes fluid that nourishes and protects sperm. Histologically the prostate is composed of glands lined by two layers of cells: a basal layer of low cuboidal epithelium covered by a layer of columnar secretory cells[(1)].Prostatic disease is responsible for significant morbidity and mortality in men throughout the world[(2)]. Of the diseases which affect the prostate, the most frequently encountered lesions in clinical practice are Benign Prostatic Hyperplasia (BPH), Prostatic Cancer and Prostatitis[(1)]. Traditionally prostate gland has been divided into anterior, middle, posterior, and two lateral lobes by drawing divergent lines from the centrally located urethra. A division that correlates better with the physiologic and pathologic features of the organ is into an inner (periurethral) and an outer (cortical) zone. The inner zone is the primary site for nodular hyperplasia (and the rare carcinomas arising from large ducts), whereas the outer zone is the site of predilection for the ordinary adenocarcinoma arising from peripheral ducts and acini[(3)]. The clinical incidence of this disease is only 8% during the 4th decade but it reaches 50% in 5th decade and 75% in 8th decade of life[(4)].Both BPH and Carcinoma of prostate present with obstructive urinary symptoms. Gleason's grading and PSA level are important markers for estimating prognosis of prostatic cancer[(5)].

Aims and Objectives:

This study was undertaken with following aims & objectives:

1. Histological evaluation of prostatic lesions.
2. To study the frequency of prostatic lesions with respect to age & histopathological types.
3. Evaluation of Gleason grade in prostatic carcinomas.
4. To correlate prostatic lesions with clinical parameters including Serum PSA level.

Materials and Methods: The present study was undertaken in the Department of Pathology, L. G. Hospital, A.M.C.M.E.T. Medical college, Ahmedabad during the period of January 2018 to December 2018. This study was conducted on 60 prostatic specimens referred to department of pathology. Brief clinical data were noted from the case records, which included the age, presenting symptoms, serum PSA levels and clinical diagnosis. All the prostatic specimens were grossly examined, fixed in 10% neutral buffered formalin and processed by routine paraffin embedding method followed by hematoxylin and eosin staining. The histopathological evaluation was done to render the diagnoses. Adenocarcinomas were graded by Gleason's grading system. Statistical analysis was performed by Microsoft Excel software.

Inclusion criteria: All types of prostatic specimens including Transurethral Resection of Prostate (TURP), core biopsy and prostatectomy were included in this study.

Exclusion criteria: Inadequate biopsies and poorly preserved prostatic specimens were excluded. Total five such cases were excluded.

RESULT:

A study to evaluate the various histological lesions in prostatic specimens was undertaken. In our study maximum cases were observed between the age group of 60-69 years (i.e. 7th decade of life) with peak distribution of benign & malignant lesions in the same age group. **(Figure-1)**

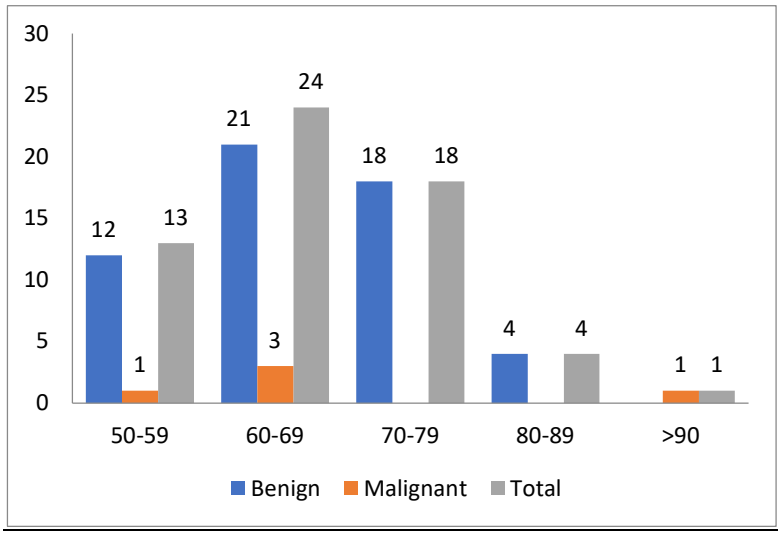

Figure 1: Age Distribution

Figure-2 depicts the frequency distribution of common symptoms in patients with prostatic lesions. The most common presenting clinical symptom was difficulty in micturation.

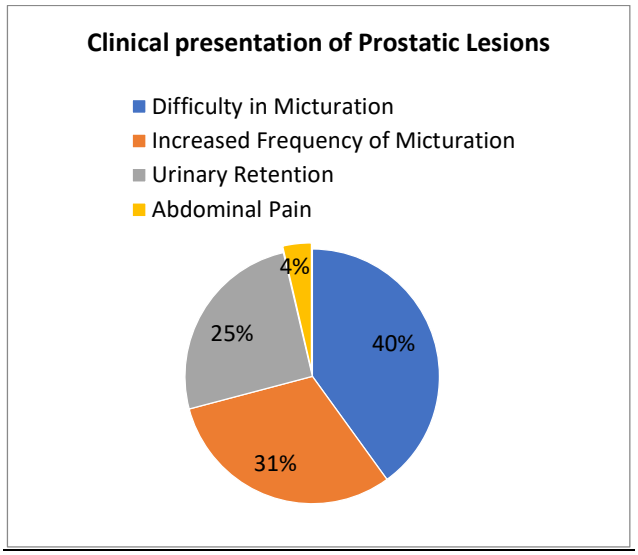

Figure 2: Frequency of clinical symptoms in patients with Prostatic Lesions

Majority of specimens studied were TURP (75%) followed by core biopsy(15%) and prostatectomy specimens (10%). Out of 55 cases studied, proportion of benign and malignant lesions was 91% and 9% respectively. **(Figure 3)**

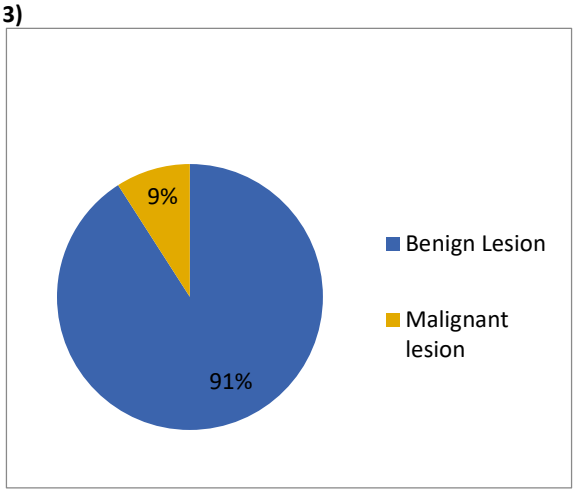

Figure 3: Proportion of Prostatic Lesions

The histopathological diagnoses in benign cases and malignant cases were as follow:

Table 1: Classification of Prostatic lesions

Benign n=50 (91%)		**Malignant n=5 (9%)**	
BPH	BPH with associated lesions		other

	BPH with chronic Inflammation	BPH with Granulomatous Prostatitis	BPH with PIN	Adeno-carcinoma	
15**(27.27%)**	30 **(54.5%)**	02 **(3.6%)**	03**(5.4%)**	05 **(9%)**	00

Out of 55 prostatic lesions, 5 cases (9%) were diagnosed as Prostatic Adenocarcinoma and amongst these the youngest patient was 50 years old and the oldest was 90 years old. All the cases of adenocarcinoma were of acinar type and were graded according to Gleasons grading system. **(Table 2)** The most common Gleasons score (GS) given was 9. Perineural Invasion was found in one out five cases which had Gleasons Score of 10 (5+5).

Table 2: GS in prostatic adenocarcinoma

Gleasons Score	**No. of Cases**
6(3+3)	01
8(3+5)	01
9(4+5)	01
9(5+4)	01
10(5+5)	01

Normal S.PSA level (<4 ng/ml) was found in 19 (34.5%) cases. Mild(4-10ng/ml), moderate (10-20 ng/ml) and marked elevation of S.PSA (≥20ng/ml) was observed in 29%, 21.8% and 14.5% cases respectively. Comparison of S.PSA levels in BPH and adenocarcinoma cases showed that, the number of BPH cases decreases while that of adenocarcinoma increases with increasing S.PSA levels**. (Figure 4)**

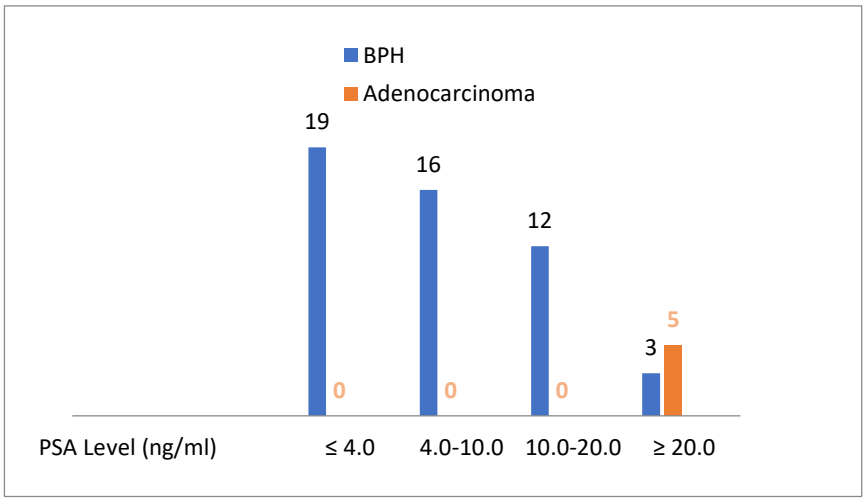

Figure 4:Comparison of S.PSA-Level in BPH and Adenocarcinoma

Discussion:

Prostatic Lesions are extremely common over the age of 50 years. The clinical incidence of this disease is only 8% during the 4th decade but it reaches 50% in 5th decade and 75% in 8th decade of life[4]. Both Benign Prostatic Hyperplasia and Carcinoma of prostate show parallel rise in incidence with advancing age.[6] In our study the most common age group affected was between 60-69 years (7th Decade). This findings are similar to Akhtar et al [7], Shilpa et al [8], Mital et al[9] and Anushree et al[10]. BPH and Carcinoma of prostate are the two most common conditions affecting prostate gland and causing various types of obstructive urinary symptoms. In our study, difficulty in micturation was the most common presenting symptom followed by increased frequency of micturation. The frequency of benign and malignant lesions was observed to be 91% and 9% respectively. Comparison with other studies (Table-3) showed the concordance results with our study.

Cases	Our Study	Sachan et al[11]	Sudha et al[12]	Mital et al[9]
Benign	91%	92.4%	92%	92.98%
Malignant	09%	7.6%	08%	07.02%

Table 3: Comparision of Benign and Malignant cases with other studies

Whenever chronic inflammation was associated with BPH, we did not label it as chronic prostatitis in the absence of clinical evidence of prostatitis. The Gleason grading of prostatic carcinoma correlates with tumor aggressiveness, tumor volume, serum PSA levels, prognosis and influence of treatment.[6] In our study, the most common Gleasons score was 9 in 40% cases. Sachan et al[11] in their study found nearly 57% of cases with Gleasons score 8-9 which is close with our study. Whereas Shilpa et al.[8] found GS 7 as the commonest score followed by GS 8 and 9.

Gleasons Score	Our Study	Sachan et al[11]	Shilpa et al[8]
5	-	14.28%	-
6	20%	14.28%	6.89%
7	0%	14.28%	55.17%
8	20%	28.58%	27.60%
9	40%	28.58%	10.34%
10	20%	0%	0%

S.PSA is a useful biomarker for early diagnosis and monitoring of prostate cancer. Because of its less predictive efficiency in low and intermediate range, it is not used alone as a screening tool[13] . In our study all five cases of adenocarcinoma had S.PSA level >20ng/ml. Hence we can say that S.PSA level has strong correlation with the risk and out come of prostatic cancer.

Summary and Conclusion:

1) Our study concluded that clinical presentation of prostatic disease was high in 7th decade.
2) Benign condition was more prevalent than malignant lesion.

3) Benign condition was frequently associated with chronic inflammation.

4) All the adenocarcinoma were of acinar type with predominant Gleasons score observed to be 9.

5) Strong correlation of PSA level with prostatic adenocarcinoma was seen in our study as all the cases of adenocarcinomas showed S.PSA >20 ng/ml

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