



## CLINICOPATHOLOGICAL STUDY OF CARCINOMA OF PROSTATE IN AJMER REGION

### Pathology

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### ABSTRACT

Prostate cancer has become a major health problem globally during the last few decades. The incidence rates of this cancer are constantly and rapidly increasing in all the population based cancer registries of India. It is primarily a disease of the elderly. The aim of study was to find out incidence of prostate cancer in Ajmer region and serum PSA relevance in its diagnosis along with various risk factors associated with it. This study was carried out for a period of three years from January 2016 to December 2018 in the department of Pathology, JLN Medical College & Associated Group of Hospitals, Ajmer. Received specimens of prostate were fixed in 10% formalin, processed and stained by Hematoxylin and Eosin followed by histopathological examination. Out of total 508 prostate biopsies received in the department 100 cases were diagnosed as carcinoma of prostate. It was observed that most of the patients were above 65 years of age. Smoking and diet rich in processed meat are high risk factors for carcinoma of prostate. Maximum no. of patient had serum PSA level >10ng/ml, which suggest that risk of prostate cancer is directly related to serum PSA level. The identification of biomarkers such as PSA that are positively correlated with the diagnosis of prostate cancer revolutionized the epidemiology of this disease.

### KEYWORDS

Prostate, Adenocarcinoma, Serum PSA.

Prostate cancer (PCa) is the second most common cause of cancer and the sixth leading cause of cancer death among men worldwide.<sup>1</sup>

The data shows that almost all regions of India are equally affected by this cancer. The incidence rates of this cancer are constantly and rapidly increasing in all the PBRCs (POPULATION BASED CANCER REGISTRIES). The cancer projection data shows that the number of cases will become doubled by 2020.<sup>2</sup>

Factors that increase the risk of prostate cancer include: older age, a family history of the disease and race. About 96% of cases occur in those over the age of 50 years.

P.S.A. is of great diagnostic utility because of its organ related specificity. Papsidaro et al & Kuriyama et al (1980) studied serum PSA in patients with prostate cancer and showed potential of serum PSA as prostatic marker.<sup>4</sup>

The aim of study was to find out the incidence of prostate cancer in Ajmer region and serum PSA relevance in its diagnosis along with various risk factors associated with it.

### Material and Methods:

The study was carried out over a period of three years from January 2016 to December 2018. The study included all inpatient clinically suspected cases of prostate cancer. Out of 508 prostate biopsies received, 100 cases diagnosed as prostate cancer and these cases were included in our study. Grading was done according to Gleason's grading system.

Detailed history with clinical presentation, and Ultrasonographic findings and serum prostate-specific antigen (PSA) levels, whenever possible were recorded.

Grossing for transurethral resection of the prostate (TURP)-Prostatic chips were received in 10% neutral buffered formalin, weight of all bits were taken and then all bits were processed.

All surgical pathology specimens were studied by conventional Haematoxylin and Eosin (H&E) sections.

Histopathological examination of the available biopsies for the study was done.

### Observation and Results:

The study was conducted in the department of pathology, J.L.N. Medical College, Ajmer. 100 cases of prostatic malignancy, were

included in this study.

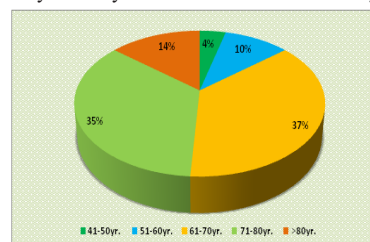
Review of history and clinical examination along with specific investigation like serum PSA level of prostate was done in nearly all cases. TURP specimens were examined for histopathological diagnosis.

Out of total 508 prostate biopsies received in the department 100 cases were diagnosed as carcinoma of prostate (19.7%) and 97 (97.0%) cases out of 100 cases of carcinoma were conventional adenocarcinoma.

**Table 1: Distribution of cases according to age**

| Age group (yrs) | No. of cases | %    |
|-----------------|--------------|------|
| 41-50           | 4            | 4    |
| 51-60           | 10           | 10   |
| 61-70           | 37           | 37   |
| 71-80           | 35           | 35   |
| >80             | 14           | 14   |
| Total           | 100          | 100% |

Maximum no. of patients of carcinoma were found in age group of 61-70 years (37 cases, 37%) followed by 71-80 yrs age group which make (35 cases, 35%) of total cases. Mean age of carcinoma prostate patients in our study was 70.33 yrs. The youngest carcinoma prostate patient in our study was 44 years old and the oldest was 87 years old.

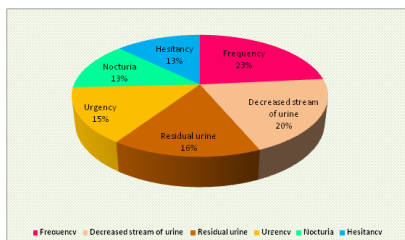


**Graph 1: Distribution of cases according to age groups**

**Table 2: Distribution of cases according to clinical complaints**

| Clinical complaints       | No. of cases | Percentage |
|---------------------------|--------------|------------|
| Frequency                 | 62           | 62.0%      |
| Decreased stream of urine | 53           | 53.0%      |
| Residual urine            | 42           | 42.00%     |
| Urgency                   | 39           | 39.00%     |
| Nocturia                  | 34           | 34.0%      |
| Hesitancy                 | 34           | 34.00%     |

Increased frequency of urination (62 cases; 62%) and decreased stream of urine (53 cases; 53%) were the most common presenting complaints.

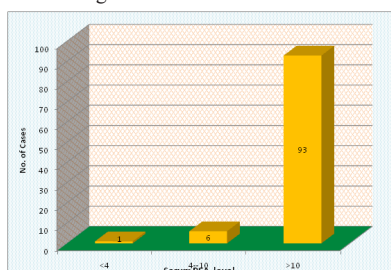


**Graph 2: Distribution of cases according to clinical complaints**

**Table 3: Distribution of cases according to serum PSA level**

| Serum PSA level (ng/ml) | Adeno carcinoma |
|-------------------------|-----------------|
| <4                      | 1               |
| 4-10                    | 6               |
| >10                     | 93              |

93(93.0%) cases out of 100 cases of carcinoma prostate were showing serum PSA level > 10ng/ml.



**Graph 3: Distribution of cases according to serum PSA level**

According to Gleason grading system maximum no. of cases of adenocarcinoma (49 cases, 49.0%) were found moderately differentiated adenocarcinoma which have Gleason score 5-7.

**Table 4: The different clinical complaints of patients were studied and compared with other studies**

| Clinical feature | Adolfsson et al 5 | William Hamilton et al 6 | Present study |
|------------------|-------------------|--------------------------|---------------|
| Frequency        | -                 | 47.0%                    | 62.0%         |
| Hesitancy        | 38%               | 17.1%                    | 34.0%         |
| Urgency          | 35%               | -                        | 39.0%         |
| Decreased stream | 49%               | -                        | 53.00%        |
| Residual urine   | -                 | -                        | 42.0%         |
| Nocturia         | -                 | 29%                      | 34.0%         |

The two most common symptoms were increased frequency of urine (62.0%) and decreased stream of urine (53.0%). These results of hesitancy and decreased stream of urine and Urgency were showing similarity to the study by Adolfsson et al 5 whose results were hesitancy(38%),decreased stream of urine in (49%) and urgency (35%).

The result of Frequency and Nocturia were showing similarity to the study by William Hamilton et al.6 whose result were frequency(47.0%) and nocturia(29%).

**Table 5: Comparison of Mean age of presentation in various studies**

| Study                   | Mean age of presentation (years) |
|-------------------------|----------------------------------|
| Mohammed AZ et al(2003) | 67.1                             |
| Metcalfe C et al(2008)  | 69±9.2                           |
| Singh et al(2013)       | 67.56±5.72                       |
| SC Ghagane et al(2017)  | 70                               |
| Present study(2020)     | 70.33                            |

The average age of prostatic adenocarcinoma was found to be 70.33 years in this study. The most common age groups of presentation were 61-70 years. These findings correlate with study of Mohammed AZ et al (2003)7 who observed mean age of carcinoma 67.1 years. Metcalfe C

et al(2008)8 and Singh et al(2013)9 who observed mean age of carcinoma as 69±9.2 years and 67.56±5.72 respectively. This also correlates with findings of SC Ghagane et al(2017) who found mean age of carcinoma as 70 years.<sup>10</sup>

Among 100 cases of carcinoma of prostate 90 were smokers and 10 were non smokers. A population-based study done by Lora A. Plaskon et al(2003) demonstrates a modest positive association between smoking and risk of prostate cancer. In particular, current smokers, smokers of >40 years duration, and those with >40 pack-years of exposure have a 40–60% elevation in risk of prostate cancer relative to nonsmokers. Huncharek et al(2010) showed an increased risk of prostate cancer for chronic smokers.

Production of carcinogenic heterocyclic amines during cooking of red meat and pyrolysates during cooking of meat over charcoal/smoke had been attributed as the reason for increased prostate carcinogenesis in the non-vegetarians. (Ali I et al 2011). A 2 allele of the CYP17 polymorphism has also been reported to be associated with an increased risk of prostate cancer in smokers and non-vegetarians. (Sobti RC et al 2009)

In present study the patients were divided in 3 groups based on serum PSA level (ng/ml). While grouping the patients in these groups, it was seen that 1.0% of carcinoma patients were having serum PSA level of <4ng/ml and 6.0% of carcinoma patients were having serum PSA level of 4-10ng/ml and 93.0% of carcinoma patients having serum PSA level of >10ng/ml. These findings nearly correlated with study done by Vacotic et al (2005)11 who found 63.8% of carcinoma patients having serum PSA level of >10ng/ml.

**Table 6: Correlation of Gleason grading**

| Sr. No. | Study                | Well diff. adenocarcinoma | Moderately diff. adenocarcinoma | Poorly diff. adenocarcinoma |
|---------|----------------------|---------------------------|---------------------------------|-----------------------------|
| 1       | Z. ahmed et al 12    | 13.8%                     | 62.5%                           | 23.5%                       |
| 2       | Jennifer R. Stark 13 | 5.77%                     | 83.40%                          | 10.82%                      |
| 3       | Present study        | 5.0%                      | 50.0%                           | 43%                         |

In this study 98 cases of Adenocarcinoma were graded by Gleason Grading system and each was assigned a Gleason score. Results of this study were divided in three grade which is based on Gleason score (sum of primary and secondary Gleason Grade) Well diff. adenocarcinoma (5.0%), Moderately diff. adenocarcinoma (50.0%) and poorly diff. adenocarcinoma (43.0%) which correlated with study of Z.ahmed et al 12 and Jennifer R.Stark et al. 13

### Summary:

In the present study out of 100 cases of prostatic carcinoma studied 98 cases were of adenocarcinoma (97 cases were conventional adenocarcinoma and 1 case was renal type clear cell variant of adenocarcinoma) and 2 cases were transitional cell carcinoma.

1. The correlation between age and incidence of carcinoma was studied, it was observed that carcinoma was most common in 7th decade. Our findings corroborates the fact that carcinoma prostate is a disease of elderly male.

2. Maximum numbers of patients were smokers(90%), which indicates that prostate cancer has strong correlation with smoking.

3. Maximum No. of patient has serum PSA level >10ng/ml (93.0% cases of carcinoma) which suggest that risk of prostate cancer is directly related to serum PSA level but the lower PSA level does not rule out the malignancy and requires other diagnostic modalities.

4. According to Gleason grading system maximum no. of cases (50) of adenocarcinoma (50%) were found moderately differentiated adenocarcinoma which have Gleason score 5-7. Followed by poorly differentiated adenocarcinoma (43%) which have Gleason score 8-10. 5 cases were found well differentiated adenocarcinoma (5%) which have Gleason score 2-4.

### CONCLUSION:

According to our study the prostate carcinoma is the most common in 7th decade of life. PSA level is the best non- invasive screening method for detection of Prostate carcinoma. Smoking & non-vegetarian diet

are high risk factors associated with carcinoma of prostate. Most common type is moderately differentiated adenocarcinoma followed by poorly differentiated adenocarcinoma. All prostate carcinoma should be graded by Gleason grading system to know the prognosis of carcinoma.

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