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HISTOPATHOLOGICAL ANALYSIS OF INCIDENTAL PROSTATE CARCINOMA IN TRANSURETHRAL RESECTION OF PROSTATE SPECIMENS: A FIVE-YEAR RETROSPECTIVE STUDY

Pathology

Dr. Alfy Ann George Assistant professor. Department of Pathology. Travancore Medical college Hospital. Kollam. Kerala. India.691020.

Dr. Anitha Das P.H* Assistant professor. Department of Pathology. Travancore Medical college Hospital. Kollam. Kerala. India.691020. *Corresponding author

Dr. I.Praseeda Professor & Head of Department. Department of Pathology. Travancore Medical college Hospital. Kollam. Kerala. India.

Dr. Baby Mathew Consultant Urologist, Department of Urology. Travancore Medical college Hospital. Kollam. Kerala, India.

ABSTRACT

Aim: To identify the rate of incidental prostate cancer in patients undergone Transurethral resection of prostate(TURP) over a period of 5 years in our center. **Methods:** A Retrospective review was conducted using Histopathological department database on all TURP specimens over a period of 5 years from January 2015 to December 2019. **Results:** Out of 570 cases of TURP during our study period, 1.9% had incidental prostate cancer. Most of these positive cases had a Gleasons score of 10, which represent poorly differentiated Adenocarcinoma. **Conclusion:** The value of pathological evaluation of TURP specimens is limited but a detailed examination helps to reduce under detection of prostate cancer.

KEYWORDS

Transurethral resection of prostate, Benign prostatic hyperplasia, Gleason score

INTRODUCTION

Prostate carcinoma and benign prostatic hyperplasia (BPH) are the two common diseases that involve the prostate. They account for more than 90% of prostate pathology. Prostate carcinoma is the most common and second leading cause of cancer related deaths in men in the developed countries. In the recent past there has been an increasing trend in the incidence of prostate cancer in India. GLOBCAN has estimated the incidence of prostate cancer as 7.1% [(1)] Lung cancer is the most common cancer in men followed by prostate and colorectal carcinoma.[(2)] This change in trend has been attributed to various factors like genetic variation, life style, diet and environmental factors. Early detection of cancer has been made effective by the use of non-invasive biomarkers like prostate specific antigen(PSA) and clinical methods such as digital rectal examination. Clinically suspicious cases are then followed up with transrectal ultrasonogram and core needle biopsy from prostate which enables proper identification of malignancy.

Over 90% of the epithelial tumors of the prostate are acinar adenocarcinomas, whereas 10 % are the uncommon morphological subtypes like the ductal type. Majority of the prostate cancers arise in the peripheral zone which present with obstructive symptoms, elevated PSA and nodular prostate enlargement. These are easily sampled by transrectal prostate biopsies. But not all prostate cancers are detected by these methods. A subgroup of prostate carcinomas is detected by chance and are referred to as "incidental prostate cancer". Clinical T1 or incidental prostate cancer is defined as "clinically inapparent tumor which is neither palpable nor visible by imaging". [(3)] These tumors are usually detected on histopathological examination of TURP specimens which is done for benign prostate disease as most of these tumors arise in the transitional zone. Isolated transitional zone carcinomas are rare. Prior to the PSA era, 27% of prostate carcinomas were clinically silent and were detected incidentally in the TURP specimens. The detection rates in post-PSA era are variable and account for about 1.4-16.7% of cancers. [(3)(4)]

In this context of increasing incidence of prostate cancer in India and changing screening practices, we aimed to assess the rate of "incidental prostate cancer" detected in TURP specimens in our institution.

MATERIALS AND METHODS

A Retrospective record based study was conducted in the Department of Pathology, Travancore Medical College, Kollam.

All TURP specimens received during study period of 5 years from Jan 2015- Dec 2019 were included in our study.

EXCLUSION CRITERIA-

Cases with a diagnosis of prostate cancer before TURP.

STUDY PROCEDURE –

After due clearance from the Institutional Ethics Committee all TURP cases from January 2015 to 2019 December (five years) were reviewed with the help of Histopathological department database to identify the number of incidental prostate carcinomas in TURP specimens during this period. All positive cases were scored with Gleasons score and graded according to Prognostic grade group.[(5)]

STASTICAL ANALYSIS

The data were entered in Microsoft excel worksheet and the results were analyzed by using simple descriptive statistics involving frequencies and proportions using SPSS 16.

OBSERVATIONS AND RESULTS

We reviewed 570 TURP specimens during our study period of 5 years from January 2015 to December 2019. 11 out of 570 patients (1.9%) diagnosed clinically as BPH was found to have incidental prostate cancer. The common age group for development of incidental prostate cancer was between 60-89 years. Most common Gleason score was 10 (5+5) forming 27% of positive cases which represent poorly differentiated Adenocarcinoma .6 cases were in prognostic grade group IV and V which represent high risk group.

Table No1:Correlation between patient age and incidental prostate cancer

Age group	Total no of cases	Incidental prostate cancer	Percentage
<60	85	0	0
60-69	197	4	2
70-79	214	3	1.4
>80	74	4	5.4

Table No2:Incidental prostate cancer-Risk, Gleason grade and Prognostic grade group

Risk	Gleason score	Prognostic grade group	Number of cases
Low risk	6	I	3
Intermediate risk, favourable	3+4=7	II	1
Intermediate risk, unfavourable	4+4=7	III	1
High risk	8,9,10	IV,V	6

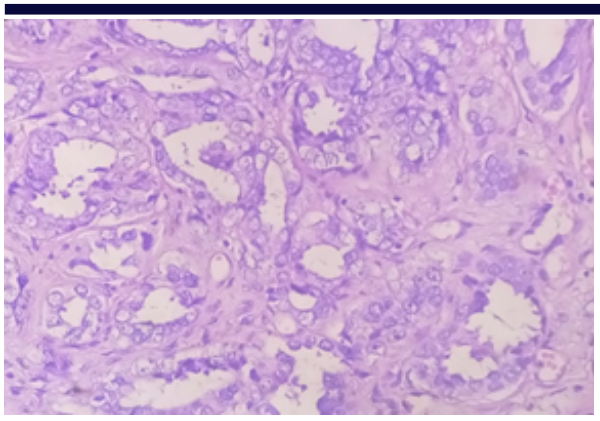

Fig 01–Prostate carcinoma in TURP specimen. Gleason score 6. Prognostic grade group I (H&E,40X)

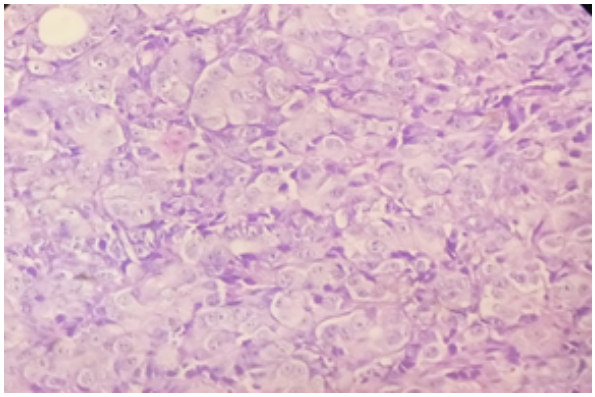

Fig 02–Prostate carcinoma in TURP specimen. Gleason score 10. Prognostic grade group V (H&E,40X)

DISCUSSION

Prostatic carcinoma is a multicentric malignant neoplasm comprised of two distinct types with different origins: transitional zone prostatic carcinoma and non-transitional zone prostatic carcinoma. Non transitional prostatic carcinomas are the commoner subgroup which is accessible to digital rectal examination and transrectal ultrasound. Non transitional zone prostatic carcinomas are generally high-grade tumors associated with prostatic intraepithelial neoplasia (PIN) and high incidence of extra prostatic extension unlike transitional zone carcinomas.[3]

Isolated transitional zone carcinomas are rare. The detection rates are variable and account for about 1.4-16.7% of cancers. [4][6] Our study showed that the detection rate of incidental prostate carcinoma was 1.9% which is in par with the recently published data. The incidence was highest in the age group 60-80 years of age. Due to its location, a large proportion of these tumors are identified in TURP specimens.[3] There are many studies that states that there has been a significant decrease in overall prevalence of incidental prostate cancer since the introduction of PSA. Tombal et al. found a drop in the incidence of incidental prostate cancer from 27% to 9% when comparing pre-PSA era to PSA era in over 1600 patients. [6] Mai et al. also showed similar results in their analysis of 1000 TURP specimens where they found significant reduction in the detection rate from 12.9 to 8%. [7] Jones et al also found a similar decrease in incidental prostate cancer from 14.9% in the pre-PSA era to 5.2% in the post PSA era in over 700 patients.[8] The possible reason for the reduction in rates of incidental prostate cancer suggested includes the preference of medical and ablative therapy for management of BPH compared to surgical removal.[9]

Transitional zone carcinomas are generally clinically asymptomatic tumors. They are of lower grade, lower Gleason scores and lower risk of extra prostatic extension. Vogit et al. found the rate of incidental prostate cancer detected to be 11.1% in their study. However, 3.4% of the patients in their series had clinically relevant prostate cancer with a Gleason score 7–10. [10, 11] In our study, most of the cases were high grade prostate carcinomas. The most common Gleason score was 10 (5+5) forming 27% of positive cases which represent poorly differentiated adenocarcinoma .6 cases were in prognostic grade group IV and V which represent high risk group.

Often following incidental diagnosis of prostate cancer after TURP, patients may undergo additional diagnostic procedures to provide further assessment of the cancer. In a study by Lee et al., 63 patients underwent transrectal ultrasound guided biopsy or radical prostatectomy procedures after being diagnosed with incidental prostate cancer. Of the 22 patients who underwent transrectal ultrasound guided biopsy, 54% were downgraded and most of these were benign. [12] Thus in general the biochemical free recurrence, overall survival, and cancer specific survival are generally excellent for patients with incidental prostate carcinoma.[3] Incidental prostate carcinoma detected in TURP specimens are further subclassified into pT1a (incidental tumor comprises <5% of TURP specimen) and pT1b (incidental tumor comprises >5% TURP specimen). The T1a tumors are generally less aggressive that T1b tumors. However, Tombal et al in their study have found few T1b tumors with higher Gleason score and higher risk of disease progression.[6]

The management of cases with incidental prostate cancer has been debatable. Active surveillance should be contemplated in patients with incidental prostate carcinoma with a PSA density of < 0.08 post- TURP and those with indistinguishable residual neoplasm on MRI. Radical prostatectomy and radiotherapy are the treatment modalities offered to patients that do not meet the criteria for active surveillance.[3]

Our limitation of our study is that it is a retrospective study based on the data of a prescreened population in a single tertiary care center. Thus, the data may not be relatable to a community setting.

V.CONCLUSIONS

In our study the incidence of incidental prostate carcinoma is 1.9%. A higher incidence of high grade prostate carcinoma was also seen in our study. The value of pathological evaluation of TURP specimens is limited but a detailed examination helps to reduce under detection of prostate cancer.

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