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RESEARCH ARTICLE

INCIDENTAL PROSTATE CANCER IN TRANSURETHRAL RESECTION OF THE PROSTATE (TURP) SPECIMENS HAVING INTERMEDIATE SERUM PROSTATE-SPECIFIC ANTIGEN (PSA) LEVEL.

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Abstract

Background: Prostate cancer is malignancy of elderly males. Latent prostate cancer are quite common after 60 years of age. It has been known that Serum prostate-specific antigen (PSA) level >10mg/ml are associated with prostate cancer.
Aim: Present study was planned to determine the incidence of latent prostate cancer in patients undergoing Transurethral resection of the prostate (TURP) for Benign prostatic hyperplasia (BPH) and also histopathological outcome of patients having PSA level between 4 to 10ng/ml.
Materials and methods: A total of 181 patients undergoing TURP for BPH were included in the study. Their age, PSA level, TURP, and histopathological outcome were analyzed.
Result: Out of 181 patients undergoing TURP for BPH, 7 had prostate carcinoma and also had serum PSA level between 4-10ng/ml.
Conclusion: Prostate cancer confined to prostate (stage 1) may be incidentally present in TURP patients with clinical diagnosis of BPH. So detailed histopathological examination and serum PSA level help in early diagnosis of stage 1 prostate cancer.

Introduction:-

Prostate cancer remains one of the most prevalent of all human malignancies. It is present in 8% of men. With age, benign and malignant changes increase in the prostate. On autopsy, up to 60% of 70 years and 80% of 80 years old are found to have latent prostate cancer [1]. The high prevalence resulting in high morbidity and mortality warrants a risk-adapted approach for its diagnosis and treatment. In the past few years the absolute number of prostatic carcinoma deaths have decline, which has been attributed the wide spread use of PSA base detection strategies.
PSA is a Kallikrein related serine protease that cause liquefactions of seminal coagulum. It is produce by normal, benign and malignant epithelial cells with increasing order high level of PSA by prostatic epithelial cells. PSA testing was approved by the US FDA in 1994 for early detection of prostate carcinoma and played a significant role in the early stage diagnosed of prostate carcinoma. The level of PSA in the blood is strongly associated with the risk and outcome of prostate carcinoma.

This study identifies the rate of incidentally detected prostate cancer in TURP specimens with clinical diagnosis of BPH. This study also identifies incidence of prostate cancer in TURP specimens who have PSA between 4-10 ng/ml.

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Materials and methods:-

This was a cross sectional study in which cases were taken according to inclusion and exclusion criteria.

Study population:

The patients with BPH attending our hospital, during the period from 1 august 2014 to 31 July 2017 undergoing TURP were taken in study considering the inclusion and exclusion criteria.

Inclusion criteria:

1. All TURP specimens with clinically diagnosed as BPH of patients up to 75 years of age and specimens sent for histopathological examination.
2. All patients with serum PSA level between 4 ng/ml to 10ng/ml undergoing TURP.

Exclusion criteria:

1. Patients over 75 years of age.
2. All patients having PSA level >10 ng/ml
3. All patients already diagnosed as carcinoma prostate.

Observation and Results:-

During the study period, a total of 208 TURP specimens were received. Out of these, 20 had PSA level>10ng/ml and 7 were > 75 years of age, so were excluded from study. Finally 181 patients who were operated as TURP were included in the study.

All data regarding age, prostate size, PSA value, TURP, histopathological outcome and outcome based on preoperative PSA level were analyzed.

S no.	Age in years	No. of patients	percentage
1	45-55	40	22.00
2	56-65	67	37.00
3	66-75	74	41.00

Table 1:-Age distribution of patients

In this study age ranged from 45 to 75 years and most patients (141) presented in their 5^{th} and 6^{th} decade of life. Mean age of presentation was 64.07+_7.58 years.

S no.	Prostate weight in grams	No. of patients	percentage
1	21-30	6	3.30
2	31-50	47	26.00
3	51-80	106	58.6
4	>80	22	12.10

Table2:-Weight of Prostate among patients

Above table shows the size of prostate found in ultrasonography and maximum patient's i.e. 83 (58.87%) had prostate size between 51-80 grams. Mean prostate size was 59.71+-14.40 gms.

S no.	PSA(ng/ml)	No. of patients	percentage
1	0-4	150	82.90
2	4-10	31	17.10

Table3:-Number of patients with differentPSA level

In this study, patients were categorized into two groups based on their PSA value. 31 patients (17.10%) of the study population having PSA value between 4-10 ng/ml and 150patients (82.90%) of the study population having PSA value between 0-4ng/ml. mean PSA value was 3.66+-2.68ng/ml.

S no.	PSA density	No. of patients	percentage
1	<0.15	160	87.39

2	>0.15	21	12.61

Table 4:-PSA density among patients

PSA density is a ratio of PSA to prostate volume. Table no.4 shows 21 patient as (12.61%) of study population having PSA density below 0.15 and 160patients (87.39%) of the study population having PSA density equal or above 0.15. mean density was 0.653+-0.054.

Outcome	No. of patients	percentage
BPH	174	96.10
Carcinoma Prostate	7	3.90

Table5:-Frequency of BPH and Prostate carcinoma in patients

We found that 37patients (3.90%) of the study population were diagnosed having incidental carcinoma prostate by histopathological report.

S no.	PSA(ng/ml)	Outcome	No. of patients	percentage
1	0-4	BPH	150	82.90
2		Ca Prostate	0	0.0
3	4-10	BPH	24	13.20
4		Ca Prostate	7	3.9

Table6:-Association of histopathology with different PSA value

Table no.6 shows that 7 patients which were diagnosed as incidental prostate cancer have PSA value >4 ng/ml and all 150 patients having PSA value,< 4ng/ml and 24 patients having PSAvalue > 4 ng/m were diagnosed as BPH after histopathological confirmation.

S, no.	Gleason's score	No. of patients	Percentage
1	<7	3	42.9
2	7-8	4	57.1
3	>8	0	00.0

Table7:-Grading of the patients according toGleason's Score

Out of 7 patients diagnosed as carcinoma prostate, 3 had Gleason's grade 6 and 4 had Gleason grade 7.

Discussion:-

Age distribution:

In the present study 41% of the patients (n=74) were insixth decade with mean age of 64.07/-7.58 years which is similar to study by Ganesh et al [2]. They reviewed prostate cancer cases registered in Mumbai and found that the average ages for the cases and controls were 64 years and 48 years respectively. Whereas several other studies like Epsteen et al[3],Antunes et al[4]and Di silvero et al [5] shows mean age of incidental prostate cancer quite higher i.e. 71, 68 and 69 years respectively. This study is in alignment with the increase incidence of prostate cancer due to awareness of the role of PSA level in diagnosis.

Prostate size:

In our study 58.60% patients (n=106)had prostate size between 51 to 80 grams. Mean prostate size was 59.7+-14.40 gms. In aging men, the prostate tends to increase in size. This phenomenon has beeninvestigated in longitudinal as well as cross sectional studies in various ethnic groups, starting with the original autopsy study conducted by Berry and Colleagues. [6]Many studies have done after that showed that across a wide spectrum of racial and ethnic groups, prostate size increases from 25 to 30 gms for men in their 40s to 30 to 40 gms for men in their 50s and to 35 gms to 45 gms for men in their 60s. The transition zone of the prostate, which is approximately 15 gms in their 40s, increase to approximately 25 gms in men in their 60s and 70s. Roehrborn C et al 2002[7].So the source of prostate enlargement is the transition zone.

PSA and PSA density:
In this study patients divided into two groups according to their PSA values. PSA below were having 4ng/ml 82.90 %(n=150) and 17.10% (n=31) were having PSA between 4ng/ml to 10 ng/ml and 87.39% (n=160) were having PSA density below 0.15 and 12.61 %(n=21)were having PSA density above or equal to 0.15.

There is no such study found related to incidence of PSA or PSA density range in BPH patients undergoing TURP.

Outcome (histopathology):
In our study 181 BPH patients who have undergone TURP without any prior suspicion of malignancy, incidental prostate cancer were found to be in 3.9%of cases (n=7).Out of 7 patients, 3 patients had 1a and Gleason's grade <7 and 4patients had T1b and Gleason's grade 3+4 prostate cancer. The above incidence rate is in range with incidental prostate cancer in modern era and close to study of Antunes et al in which they found 1.85 patients (n=30) diagnosed having incidental prostate cancer in 168 TURP patients who were clinically benign with minimum age of 68 years. According to study by Ziguener et al 2013 [8)] in the PSA era, the rate of incidental prostate cancer has decreased by more than 50% .Jones et al 2009[9] from Clevland Clinic compared the frequency of incidental prostate cancer among patients undergoing TURP between the pre PSA era and the PSA era, and showed a decrease of frequency from 14.9%(3 of 228) to 5.2%(26 of 501) with clinically significant drop in stage T1b. A multicenter review done in 11 centers in Korea by Yoo and coworkers , incidental prostate cancer was detected in 4.8% of the patients who underwent surgical treatment for BPH and more than half of them showed that in addition to DRE findings, a combination of transition zone volume and PSA can be used as a useful predictive factor of incidental prostate cancer .[10]In our study, the age of of the patient was a positive predictor for incidence of occult prostate cancer similar to studies by Yoo et al 2012(2014).Tombal and coworkers in a study on 1648 patients undergoing surgery for BPH , found T1 prostate cancer in 11% patients. They concluded that the use of PSA assay have decreased but not suppressed the incidence of T1 prostate cancer, with a greater effect on those tumors at a higher risk of progression(T1B) .[11]

The low incidence rate found in our study can be due to narrow range of inclusion criteria (PSA value upto 10 ng/ml) and small sample size in comparison to other studies. Another possible reason for the reduction in incidental prostate cancer can be due to decreased rate of surgical management of BPH, due to the increased use of medical therapy as well as an increased use of ablative therapies, which do not always provide tissue for pathologic analysis in patients who ultimately require surgical management of their BPH.

In this study 7 patients were diagnosed incidental carcinoma prostate who were having PSA above 4ng/ml which is a risk factor for occult prostate cancers. We need more data to significantly correlate PSA value in predicting incidental carcinoma prostate in clinically unsuspected patients undergoing TURP.

Only 3 patients had T1a and Gleason's grade <7, opting for a surveillance strategy due to older age and low grade lesion. Four patients had T1b and Gleason's grade 3+4 prostate cancer and underwent androgen deprivation therapy in the form of bilateral orchiectomy.

Conclusion:-

According to present study incidence of incidental prostate cancer in patients undergoing TURP for clinically diagnosed BPH was found to be 3.9%. The age of the patients is a positive predictor of incidental prostate cancer, also study shows that PSA >4ng/ml (range 4-10 ng/ml)is a risk factor for occult prostate cancer and recommend screening of patients in TURP with serum PSA level may improve rate of correct diagnosis of prostate carcinoma.

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