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Research Article

ESTIMATION OF SERUM PSA LEVEL IN BENIGN, PREMALIGNANT AND MALIGNANT LESIONS OF PROSTATE IN BIKANER, RAJASTHAN

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ABSTRACT

Background: Prostate-specific antigen (PSA) is a widely used biochemical marker for the early detection and monitoring of patients with prostatic cancer.
Materials and Methods: This study was conducted on the patients of department of urology, S.P. Medical College and Associate group of Hospitals, Bikaner Fifty Six (56) Cases of Prostate enlargement benign, premalignant and malignant were included in this study. The selection of cases will be random.
Results: Maximum no. of patients of BPH was found in age group of 61-70 years (51.22%) and carcinoma found in 71-80 years age group (30.75%). The average age of BPH is found 67.29 years and average age of carcinoma is found 71.69 years. Maximum no. of patients (45 cases, 80.35%) presented with complaints of increased frequency of urine. Only one (7.70%) case out of 13 cases of adeno carcinoma was showing serum PSA level <4ng/ml.Only one (7.70%) case out of 13 cases of adeno carcinoma were showing serum PSA level 4-10ng/ml.11 (84.60%) case out of 13 cases of adeno carcinoma were showing serum PSA level >10ng/ml.14 (34.85%) cases out of 38 cases of BPH were showing serum PSA level of <4ng/ml.
Conclusion: In our study, PSA levels appear to be elevated in both benign and malignant lesions, therefore, the usefulness of PSA alone as an early detector of prostatic cancer by itself is questionable

INTRODUCTION

Prostate cancer is the most common visceral malignancy in men, and its incidence tends to increase in the coming decades with the increased life expectation. Screening with serum prostatespecific antigen (PSA) has led to a marked increase in the frequencies of prostatic biopsies[1] and helps in detection of prostate cancer at an earlier stage.

P.S.A. is of great diagnostic utility because of its organ related specificity. Papsidaro *et al* & Kuriyama *et al* (1980)[2] studied serum PSA in patient with prostate cancer and showed potential of serum PSA as a prostatic marker.

PSA levels are affected by many factors that may be unrelated to prostate disease, including age and race. Previous studies have found that lifestyle risk factors such as aging and obesity are well-known for the aberrant prostate functions.

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MATERIAL AND METHOD

This study was conducted on the patients of department of urology, S.P. Medical College and Associate group of Hospitals, Bikaner Fifty Six (56) Cases of Prostate enlargement benign, premalignant and malignant were included in this study. The selection of cases will be random.

No. of cases – Fifty Six (56)

Following information was obtained from every patient according to proforma

1. Name and age
2. Relevant symptoms
3. Routine and special investigation (Serum PSA)

Serum PSA Measurement
Analyzer used:- Elecsys 2010

Test kit used-Total PSA, cobas manufactured by Roches diagnostic USA

Test principal-Sandwich principle. Total duration of assay: 18 minutes

- I[st] incubation: 20 uL of sample, a biotinylated monoclonal PSA specific antibody, and a monochlonal PSA specific antibody labeled with a ruthenium complex react to form a sandwich complex
- 2[nd] incubation: After addition of streptavidin coated imcroparticles, the complex becomes bound to the solid phase via interaction of biotin streptavidin.
- The reaction mixture is aspirated into the measuring cell where the microparticles are magnetically captured onto the surface of the electrode. Unbound substances are then removed with ProCell. Application of a voltage to the electrode then induces chemiluminescent emission which is measured by a photomultiplier
- Results were determined via a calibration curve which is instrument- specifically generated by 2 point calibration and a master curve provide via the reagent barcode.

RESULTS

Table I Distribution of patients according to age

	Average age	41-50 yrs (%)	51-60 yrs (%)	61-70 yrs (%)	71-80 yrs (%)	>80 yrs (%)	Total
Adeno carcinoma	71.69	1 (7.69%)	2 (15.38%)	3 (29.07%)	4 (30.75%)	3 (29.07%)	13
BPH	67.29	0	10 (24.39%)	21 (51.22%)	9 (21.95%)	1 (2.44%)	41
Chronic inflammation		0	2	0	0	0	2

Maximum no. of patients of BPH was found in age group of 61-70 years (51.22%) and carcinoma found in 71-80 years age group (30.75%). The average age of BPH is found 67.29 years and average age of carcinoma is found 71.69 years.

Table II Distribution of patients according to clinical complaints

Clinical complaints	No. of cases	Percentage
Frequency	45	80.35%
Decreased stream of urine	45	80.35%
Hesitancy	31	55.35%
Urgency	21	37.5%
Residual urine	21	37.5%

Maximum no. of patients (45 cases, 80.35%) presented with complaints of increased frequency of urine and decreased stream of urine followed by less common symptoms like hesitancy (55.35%), urgency (37.5%) and residual urine (37.5%).

Table III Distribution of cases according to serum PSA level

Serum PSA level (ng/ml)	Adeno carcinoma	BPH	Chronic inflammation	Total
<4	1	14	0	15
4-10	1	5	0	6
>10	11	19	2	32

Unavailable – 3

Only one (7.70%) case out of 13 cases of adeno carcinoma was showing serum PSA level <4ng/ml.

- Only one (7.70%) case out of 13 cases of adeno carcinoma were showing serum PSA level 4-10ng/ml.
- 11 (84.60%) case out of 13 cases of adeno carcinoma were showing serum PSA level >10ng/ml.
- 14 (34.85%) cases out of 38 cases of BPH were showing serum PSA level of <4ng/ml
- 5 (13.16%) cases out of 38 cases of BPH were showing serum PSA level of 4-10ng/ml
- 19 (50%) cases out of 38 cases of BPH were showing serum PSA level of >10ng/ml.
- 2 out of 2 case of chronic inflammation showing serum PSA level of >10ng/ml.

DISCUSSION

- The study was conducted in the department of pathology, S.P. Medical College, Bikaner. 56 cases of prostatic enlargement benign and malignant, admitted to department of urology were included in this study. Review of history and clinical examination along with specific investigation like serum PSA level. The different clinical complaints of patients were studied. The two most common symptoms were increased frequency of urine (80.35%). And decreased stream of urine (80.35%). Hesitancy was found in 55.35% of cases while residual urine and urgency was found in 37.5% of cases. These results were showing the similarity to the study by N. Joshi *et al* (2008)[3]. Whose results were increase frequency (86.05%) and decreased stream of urine in 85% cases.
- 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 7.70% of carcinoma patients were having serum PSA level of <4ng/ml and 7.70% of carcinoma patients were having serum PSA level of 4-10 ng/ml and 84.62% of carcinoma patients having serum PSA level of >10ng/ml. These finding correlated with Vacotic *et al* (2005)[4] who found 63.8% of carcinoma patients having serum PSA level of >10ng/ml.
- However few dissimilarities were found in observations carried out by Nishiya *et al* (1994)[5] and Brawer *et al* (1989)[6] who found 21-43% and 32% of cases respectively having serum PSA level <4ng/m; were diagnosed to have carcinoma. This may be due to inadequate sample size and the study was carried out on inpatients already having symptoms.

CONCLUSION

PSA test is one of the best screening tools available for early detection of prostate cancer. However, the lack of specificity is a noteworthy drawback of this test. With alternative modifications in PSA estimation quoted to have a limited value by the European Association of Urology[7], we attempted to see the adequacy of PSA test by itself to discriminate between benign, premalignant, and malignant cases.

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