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FREQUENCY OF CARCINOMA OF PROSTATE IN CLINICALLY BENIGN PROSTATIC HYPERPLASIA AND ROLE OF DIFFERENT SCREENING TESTS

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ABSTRACT

Objectives: To assess the frequency of carcinoma in clinically benign prostatic hyperplasia and role of digital rectal examination (DRE) and prostatic specific antigen (PSA) in assessment of these patients.

Data source: Patients admitted to the Department of Urology and Renal Transplantation with lower urinary tract symptoms (LUTS) due to enlarged prostate.

Design of study: Descriptive Study

Place and Duration of Study: Department of Urology and Renal Transplantation, Quaid-I-Azam Medical College /Bahawal Victoria Hospital, Bahawalpur, from January 2007 to December 2010.

Patients and Methods: Patients presenting with lower urinary tract symptoms over the age of 50 years were evaluated on International Prostate Symptoms Score (IPSS), clinically examined and post-voiding residual urine determined on abdominal ultrasonography. The selection criteria were; Refractory retention of urine, Severe IPSS, absence of signs of malignancy on Digital Rectal Examination (DRE) and post-voiding residual urine more than 100 ml. Thus a total 300 patients were selected. Patient's blood sample was sent to laboratory to assess Prostate Specific Antigen (PSA) level pre-operatively. All these patients underwent either transurethral resection of prostate (TURP) or transvesical prostatectomy (TVP) and prostatic tissue was sent for histopathology.

Results: In this study, 13.33% patients were found to have carcinoma of prostate inspite of being clinically benign prostates in all patients, irrespective of PSA range. The PSA value was found < 4ng/ml in 211 (20.33%) patients and remaining 89 (29.67%) patients had PSA value > 4ng/ml. In this study, 9.95% patients had carcinoma prostate inspite having normal PSA and benign prostate on DRE while with rising PSA levels and normal DRE, chances of malignancy detection increases (66.67%).

Conclusion: We conclude that although frequency is low the possibility of malignancy in clinically benign enlarged prostate should be borne in mind whenever subjecting the patient for screening, assessment and treatment. DRE alone is insufficient to detect malignancy. PSA in combination with DRE is beneficial in predicting prevalence of carcinoma prostate.

Keywords: Carcinoma Prostate (CaP), Digital Rectal Examination (DRE), International Prostate Symptom Score (IPSS), Prostate Specific Antigen (PSA), Transurethral Resection of Prostate (TUR-P), Transvesical Prostatectomy (TVP).

INTRODUCTION

Prostate cancer is the second most common cause of cancer deaths in men, with an estimated 41,000 deaths and more than 125,000 new cases per year[1]. Currently it is the most common male malignancy and majority of cases are diagnosed at a time when tumour has extended beyond the confines of the gland, making it incurable[2]. No clear etiologic factors have been identified, although a familial predisposition has been demonstrated, and an increased risk has been associated with cigarette smoking and a high-fat diet[3]. It is a disease of the elderly, with 75% of patients diagnosed between age 60 and 85 years and a mean age at diagnosis of 72 years[4].

Different Protocols and screening tests are being used worldwide for its early detection. The most commonly accepted protocol being practiced is clinical diagnosis based on Digital Rectal Examination, screening by serum Prostate Specific Antigen (PSA) and Transrectal Ultrasonography (TRUS)[5]. Most patients are asymptomatic at the time of diagnosis. Prostate

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cancer is most commonly discovered today because of an elevated PSA or abnormal DRE or as an incidental histopathological finding on a transurethral resection of the prostate (TURP) specimen. Digital Rectal Examination has always been the primary method for evaluating the prostate. The accuracy rate of digital rectal examination in detecting malignancy is 20%-40%[6].

The widespread use of the serum PSA test has been important in early diagnosis[2,6]. The essential objective of screening for prostate cancer is detection of disease when it is localized and thus at curable stage before the cancer reaches to the bones where the success of treatment is only temporary[4].

The purpose of this study was to find out the frequency of carcinoma prostate in patients with clinically benign prostatic hyperplasia. The efficacy of prostate specific antigen and digital rectal examination as screening tests for carcinoma prostate was also evaluated.

PATIENTS AND METHODS

This descriptive study was conducted at the department of Urology and Renal transplantation Quaid-e-Azam Medical College / Bahawal Victoria Hospital Bahawalpur, from Jan 2007 to Dec 2010. Patients presenting with the lower urinary tract symptoms (LUTS) were interviewed on IPSS (International Prostate Symptom Score) proforma, to decide surgical intervention were included in the study.

A detailed history of presenting complaints, general physical and systemic examination was done on admission. Patient's blood sample was sent to the laboratory for serum PSA assay. Digital rectal examination was performed, to evaluate either prostate was benign in consistency, had nodules or suspicion of carcinoma prostate. The prostate gland was palpated for size, consistency, rectal mucosal mobility and any irregularities in surface were noted. The normal prostate gland is the size and shape of a chestnut with a rubbery consistency similar to the nasal cartilage.

The final inclusion criteria were; refractory retention of urine, severe IPSS (19-35), prostate apparently benign on DRE and on ultrasonography post-voiding residual urine more than 100ml.

A total of 300 patients were included. Laboratory investigations like Complete Blood Count, Urine routine examination, Serum Creatinine and Viral markers were also done routinely in all patients. ECG and X-ray chest were done for pre-anesthesia assessment.

All patients underwent urethrocystoscopic examination before surgical intervention. Surgical procedure was decided on the basis of prostatic weight approximated on DRE and confirmed on Ultrasonography. Transvesical Prostatectomy was done in prostates >100 grams while transurethral prostatectomy was done in prostates of <100 grams. The prostatic tissue specimen was sent for histopathology. This data was collected on a specially designed proforma (attached as annexure).

Data was analysed using SPSS version 15. Descriptive statistics were used to describe the data.

RESULTS

Three hunderd patients were included in this study with age range between 50 to 80 years (mean 65±8 years). Majority (85%) of patients were within 58 to 74 years age. Presenting complaints of patients are shown in table-1.

On histopathology report of the prostatic tissue, adenocarcinoma of the prostate was found in 40 (13.33%) patients while the remaining 260 (86.67%) patients had benign prostatic hyperplasia.

There were 12 patients who had PSA levels above 10ng/ml. Out of these 12, in eight patients (66.67%) adenocarcinoma was detected. Out of 77 patients who had PSA levels between 4-10ng/ml, 11 (14.28%) were found to have adenocarcinoma of prostate. While only 21 (9.95%) patients, out of 211 patients having PSA levels less than 4ng/ml had prostatic Carcinoma (Table-2). There was a significant number of patients (9.95%) who had normal serum levels of PSA and clinically benign appearing prostate on DRE but on histopathology had carcinoma prostate. As the level of PSA rose in such patients, detection of

carcinoma on histology increased significantly (66.67%).

Table-1: Presenting Complaints of Patients (n=300).

Symptoms	Frequency (No. of Patients)	Percentage
Lower Urinary Tract Symptoms (Urgency, Frequency, Hesitency, Poor stream, straining to void)	161	53.66
Retention of Urine	110	36.66
Haematuria	29	9.66

Table-2: Serum PSA Levels of Patients and Carcinoma detection rates in these patients (n=300).

	Patients		Adenocarcinoma detected	
PSA Level	**Frequency**	**Percentage**	**Frequency**	**Percentage**
< 4.0ng/ml	211	70.33	21	9.95
4-10ng/ml	77	25.66	11	14.28
11-20ng/ml	09	3.0	06	66.67
>20ng/ml	03	1.0	02	66.67

DISCUSSION

Carcinoma of prostate is a common cancer worldwide due to increasing elderly population and relatively better diagnostic methods[7]. However, unlike most cancers, which have a peak age of incidence, the incidence of carcinoma prostate continues to increase with advancing age[4]. There has been a significant increase in the incidence of the disease over the past decade. It is estimated that the lifetime risk of a man developing microscopic foci of CaP is 30%, clinically significant CaP 10% and the risk of dying from CaP is 3%[3].

Since prostate cancer usually develops insidiously for many years without signs or symptoms until it reaches the non-curable stage of metastases in the bones, screening in men is essential[3-5]. The gold standard triad for diagnosing prostate cancer comprise DRE, PSA level and transrectal ultrasonography[5]. DRE is an important part of every physical examination and deserves special attention in patients of LUTS. The size of the prostate noted on DRE correlates poorly with obstructive voiding symptoms and thus should not be used to screen for or rule out benign prostatic hyperplasia. As the accuracy rate of DRE is only 20%-40% in diagnosing Carcinoma prostate[6], so, alone it may be relatively insensitive for screening of prostate cancer and to detect localized potentially curable cancer[8]. Our study focused the DRE findings very keenly as we purely selected patients who were having clinically benign prostates. To rule out observer bias, all patients were assessed by two persons at different time.

There has been considerable debate about the potential merits of a PSA-based screening programme, but there is little evidence at present to suggest that screening meets the World Health Organization (WHO) criteria for screening[3,4]. In our study, we obtained quantitative levels of PSA on all patients under study. The values obtained ranged from <4ng/ml, 4-10ng/ml, 11-20ng/ml and >20ng/ml, so that cancer detection in our study patients could also be assessed according to PSA level while prostate was found to be clinically benign. Protease specific antigen is secreted almost exclusively by the prostate and, although often thought of as a marker for CaP, can in fact be elevated in a number of conditions such as urinary retention, urinary tract infection, prostatitis, or after instrumentation, DRE, catheterization and cystoscopy[9]. With the advent of PSA screening, the lifetime risk of a diagnosis of CaP is now about 16%[4].

Currently, transrectal ultrasound (TRUS)-guided prostate biopsy is the gold standard to take pathological specimens for the diagnosis of

CaP[5]. The role of TRUS in our study was not validated because clinical assessment was showing benign prostate in all patients, while elevated PSA level raises suspicion but we performed TUR biopsy as patients symptoms could also be alleviated along with tissue for histopathology.

Due to non-availability of TRUS in our centre, only ultrasound abdomen for prostate size, consistency and residual urine was done. The prostatic tissue was sent for histopathology. There is 13.33% incidence of carcinoma prostate in our study, which is comparable to different studies. Cooner et al[10] reported 14%, and Rasool et al[11], 19% incidence of carcinoma prostate in patients with clinically benign prostate. Javaid et al[12] reported this incidence 6% while Iqbal[7] as 8%. Shah[13] and Hamid[14] reported 4% and Khan et al[15] 2%. The difference in results in due to the different sample size which was <100 in some studies.

Some studies have suggested that as many as 25% of men with prostate cancer have a serum PSA measuring less than 4ng/ml. Reducing this cut-off to 2.5ng/ ml improves the sensitivity of testing, but with an inevitable reduction in specificity and a consequent increase in the number of negative prostatic biopsies. The frequency of diagnosis of prostate cancer has increased substantially since the introduction of PSA screening[16].

The case for CaP screening is supported by the fact that the disease is burdensome, PSA improves detection of clinically important tumors without significantly increasing the detection of unimportant tumors. Most PSA-detected tumors are curable, prostate cancer mortality is declining in regions where screening is done and curative treatments are available[17]. If screening is planned, it appears that the use of both DRE and serum PSA is preferable to either used alone. The routine use of PSA testing has had a profound effect on the management of the disease[16,17]. Therefore, our study suggests that clinically benign enlarged prostate and raised PSA levels predict the increased chances of carcinoma detection. But exceptional cases do present, as one of our patients under study with PSA> 40ng/ml and grossly enlarged prostate > 200gms, had benign prostate on histopathology. Therefore, raised PSA level does not guarantee the presence of malignancy in prostatic tissue. The overall incidence of prostate cancer detection in this study was 13.33%. These statistics approve the combined efficacy of DRE and PSA levels for early detection of carcinoma of prostate gland when disease is still concolized.

DRE alone is not sensitive enogh for PSA level along with DRE is preferable for screening of detection of prostate carcinoma.

CONCLUSION

It is concluded that benign consistency of prostate on DRE does not rule out the chances of malignancy. This study also concludes that detection of carcinoma in clinically benign prostate (on DRE) rises substantially with increase in serum levels of PSA.

REFRENCES

1. Cal C, Gunaydin G, Ozyurt C, Omay S. Doxazosin: A new cytotoxic agent for prostate cancer. Br J Urol 2000; 85: 672–5.
2. Iqbal N, Bhatti AN, Hussain S. Role of Digital Rectal Examination and prostate Specific Antigen in detecting carcinoma prostate. J Coll Physician Surg Pak 2003; 6: 340–2.
3. Macfarlane, Michael T: Prostate Cancer. Urology, 4th Edition: Lippincott William & Wilkins 2006; 22: 145-55.
4. Ries LAG, Eisner MP, Kosary CL, et al ed. SEER Cancer Statistics Review, 1975-2001, Bethesda, Md: National Cancer Institute; 2004. Available at: http://seer.cancer.gov/csr/1975_2001.
5. Franco O E, Arimak, Yanagwa M and Kawamura J. The usefulness of Power Doppler Ultrasonography for diagnosing prostate cancer: histological correlation of each biopsy site. Br J Urol 2000; 85: 1049–52.
6. Akdas A. Turkan T, Turkeril, Cerviki, Biren T, Gurmen N. The diagnostic accuracy of digital rectal examination, transrectal ultrasonography, prostate specific antigen (PSA) density in prostate carcinoma. Br J Urol. 1995; 76: 54–6.
7. Iqbal SA, Sial K. Problems in the management of carcinoma of prostate. A study of 44 cases. Specialist Pak J Med Sci. 1995; 11: 96–101.
8. Guinan P et al: The accuracy of rectal examination in the diagnosis of Prostate Carcinoma. New Engl. J Med. 1980; 303: 499.
9. Micheal J, Barry MD: PSA testing for early diagnosis of Prostate Cancer. N Engl. J Med. 2001; 344(8): 1373-7.
10. Seaman E, Whang M, Olsson CA, Katz A, Cooner WH, Benson MC. PSA Density (PSAD). Role in Patient evaluation and Management. Uro Clin North Am 1993; 20:653–63.
11. Rasool M, Tabassum SA, Chaudhry FN: Prevalence of Carcinoma in Clinically Benign Prostatic Hyperplasia. Pak. J of Surg. 2002; 18(1): 9-12.
12. Javiad Ms, Tasncem RA, Manan A. Diagnosis of carcinoma. The yield of serum PSA, DRE & TRUS. Pak J Surg 1996; 12: 91–104.
13. Shah I. Incidence of malignancy in prostatic enlargement at Liaquat Medical College Hospital, Hyderabad. 1996:105. (Dissertation).
14. Hamid A. Percentage of patients with carcinoma prostate presenting clinically as BPH (Dissertation). Abbottabad. 1998–72.
15. Khan IA et al: Carcinoma of Prostate in Clinically Benign Enlarged Gland. J Ayub Med Coll Abottabad 2008: 20(2): 90-2.
16. Gelmann EP. Complexities of Prostate _cancer risk. New Engl J Med 2008; 358(9): 96.
17. Walsh PC, De Weese TL, Eisenberger MA. Localized Prostate Cancer.New Engl J Med 2007; 357(26): 2696–705.