FREQUENCY OF INCIDENTAL CARCINOMA PROSTATE IN PATIENTS WITH CLINICALLY BENIGN PROSTATIC HYPERPLASIA

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ABSTRACT

Objective: To determine the frequency of incidental carcinoma of prostate in patients with clinically benign prostatic hyprplasia.

Methodology: This cross-sectional study was carried out on 241 patients in the department of urology, Institute of Kidney Diseases, Peshawar, from January 2018 to December 2019. All patients above 50 years of age who presented with clinically enlarged prostate and prostate specific antigen level of less than 10 ng/ml were included in the study. Patients with a history of surgical intervention, or prostate specific antigen more than 10 ng/ml and with nodule or hardness of prostate on digital rectal examination were excluded from the study. Transurethral Resection of Prostate (TURP) was performed by consultant urologist and specimens were sent for histopathology.

Results: The mean age of patients was 61.03 ± 6.63 years with a range of 53 - 75 years. The pre-operative mean prostate specific antigen was 5.96 ± 1.86. On histopathology report, incidental prostatic carcinoma was recorded in 10% of patients.

Conclusion: Incidental carcinoma prostate is fairly common in our population who have benign prostatc hyperplasia.

Key Words: Benign prostatic hyperplasia, incidental carcinoma prostate, Prostate specific antigen.

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INTRODUCTION

Prostate is an organ of the male genital system which gains importance with advancing age because of increased risk of its diseases[1]. Frequent pathologies related with the prostate are prostatitis, benign prostatic hyperplasia (BPH) and carcinoma prostate[2]. Carcinoma of the prostate (CaP) is a common malignant condition of the prostate. After lung cancer, CaP is the second leading cause of cancer deaths in men above 65 years of age[3]. Carcinoma prostate is rapidly becoming frequent cancer in men with variable incidence in different countries. In Sweden it is reported at highest level and in Singapore at lowest[4]. Carcinoma prostate arises in the transitional zone in 25%, central zone in 5% and 70% in the peripheral zone. The usual presentations are the symptoms of prostatism or lower urinary tract symptoms (LUTS) like frequency of micturation, urgency, urge incontinence, nocturia, poor stream, intermittency, straining with micturation and incomplete emptying of urinary bladder. Others may be bone pain, spinal cord compression and hematuria but the majority present with advanced disease[5- 6]. The recent reduction in prostate cancer-specific death rates is due to earlier diagnosis of aggressive cancers[7]. LUTS due to BPH is one of the commonest problems of men in their 50s, and 80% of men suffers in their 70s[8].

The common urologic conditions in older men are BPH and carcinoma prostate and the relation between these conditions is supported by many evidences. In recent studies it has been shown that BPH and CaP coexist usually. Carcinoma prostate is found incidentally in about 10%–20% of surgically removed BPH specimens[9]. Frequency of incidental prostatic carcinoma was observed in 6% of patients after transvesical resection of clinically BPH[10]. A study conducted in patients who underwent transurethral resection of prostate (TURP) for clinically enlarged prostate showed incidental carcinoma prostate in 2.3% of patients[11]. Another study conducted in Shifa International Hospital Islamabad, Pakistan, showed that prostatic carcinoma was found in 5.8% and prostatic intraepithelial neoplasia in 0.5% of patients[12].

Prostate Cancer in unscreened populations is usually

advanced stage disease. In contrast, incidentally detected CaP is at an early stage and has a favorable outcome in terms of life expectancy if proper treatment is done in time. Thus these patients can be prevented from morbidity and mortality caused by the advance stage of the disease. The objective of the current study was to determine the frequency of incidental carcinoma of prostate among patients with clinically BPH.

METHODOLOGY

This Descriptive cross-sectional study was carried out on 241 patients in the Department of Urology, Institute of Kidney Diseases, Peshawar, from January 2018 to December 2019. Ethical approval was obtained from research ethics committee of IKD. Non-probability purposive sampling was used to enrol patients. All patients above 50 years who presented with clinically enlarged prostate and having PSA less than 10 ng/ml were included in the study. Patients with history of previous surgical intervention, having PSA more than 10ng/ml and those with nodule or hardness of prostate on DRE were excluded from the study. Patients fulfilling the inclusion criteria were admitted in the ward through out patient department (OPD). Patients were prepared for surgery and experienced urologist did TURP. The chips of the resected prostate were sent for histopathology. Data regarding age, PSA level, and histopathology report was recorded in a standardized proforma. SPSS version 20 was used to analyze the data. Mean and standard deviation was calculated for continuous data while frequency and percentages were calculated for categorical data. Chi-Square test was used to find association between categorical variables.

RESULTS

Mean age of the patients was 61.03 + 6.63 years. Age range was 53 - 75 years. On grouping the sample in different age groups, majority were of 50 to 60 years (Table 1). The mean pre operative PSA level was 5.96 + 1.86 with 54.8% patients having PSA level of less than or equal to 5 and 45.2% having PSA level of more than 5 (Table 2). On histopathology, the incidental prostate cancer was recorded in 10% of patients (Table 3).

DISCUSSION

This study shows that moderate-to-severe LUTS due to clinically enlarged prostate were found in 108 (44.8%) patients of 50-60 years, 96 (39.8%) patients of 61-70 years and 37 (15%) patients of >70 years. However, McVary KT et al. concluded that moderate-to-severe LUTS due to clinically BPH occurs in men of 50 – 59 years by approximately 25%, 60 - 69 years by 33% and men over 80 years by 50 %[13]. So it is necessary to find out the incidence of prostatic malignancy in above age groups. Further, after trans uretheral resection of the

Table 1: Age-wise distribution of patients (n=241)

	N	Range	Minimum	Maximum	Mean	Std. Deviation
Age of the patient	241	22.00	53.00	75.00	61.0332	6.63160
Age Groups		**Frequency**			**Percent**	
50 to 60 years		108			44.8	
61 to 70 years		96			39.8	
>70 years		37			15.4	
Total		241			100.0	

Table 2: Pre-operative PSA levels (n = 241)

	N	Range	Minimum	Maximum	Mean	Std. Deviation
Serum PSA Level	241	6.00	3.00	9.00	5.9627	1.86711
PSA Categories		**Frequency**			**Percent**	
Up to 5		132			54.8	
5 to 10		109			45.2	
Total		241			100.0	

Table 3: Frequency of incidental carcinoma of the prostate (n = 241)

Incidental Prostate Carcinoma	Frequency	Percent
Yes	24	10.0
No	217	90.0
Total	241	100.0

prostate (TURP) of clinically enlarged prostate, the incidental prostate cancer was recorded in 10% of patients whereas the study conducted by Ornstein DK et al. shows that patients who underwent TURP for symptomatic BPH were having incidental carcinoma prostate in significant proportion (>15%)[14]. The increased attention and prompt diagnosis has resulted in good detection rates of carcinoma prostate, especially in younger age groups. Eighty three percent of prostate cancers were found in men who had BPH elsewhere in the prostate as shown by autopsy data in almost all age ranges[15].

One mode of early detection of carcinoma prostate is PSA screening but that is not as reliable as histopathological evidence[16]. Another study showed BPH as a risk factor for carcinoma prostate after analysis of 220 men with clinical prostatic carcinoma[17]. Most patients having obstructive symptoms are recently managed conservatively or with minimally invasive techniques[18]. The newer techniques such as microwave or laser therapy has resulted in a drastic decrease in the number of TURPs'[19]. In this modern era, studies in North America have suggested a decrease in diagnosing previously unrecognized carcinoma prostate during TURP[20]. New biomarkers such as Prostate Health Index (PHI) and the 4 K score were introduced as PSA is having high rates of false-positive cases[21]. Methodologically there are limited reports comparing case series to uncontrolled and unmatched historical published series. In the PSA era, using a specific population, it has been shown by the first report that there is a statistically significant decrease in the rate of carcinoma prostate (T1a and T1b). Post TURP cases may have negative biopsy in occult carcinoma prostate and these must be identified. Men identified at autopsy as cases of carcinoma prostate even in their 30s' were having a prevalence of 31 percent[22]. Furthermore, in a Trial of Prostate Cancer Prevention, it has been noticed that most of the men having normal PSA levels were found to have carcinoma prostate during biopsy performed without any clinical indication[23]. Multiple studies on this aspect have revealed that the false-negative biopsy rate is in the range of 30 % or higher[24- 25]. In our study, 10% of patients were having incidental Ca prostate with pre operative PSA upto 10 ng/ml while no incidental Ca was noted in patients having PSA below 5 ng/ml. In analysis of 1,106 patients carried out by Araujo LH et al., 51 (4.6%) patients had incidental carcinoma prostate. The mean age of the patients was 70.6 (54-90) years, mean preoperative PSA was 9.5 ng/ml. Of these patients, 32 (65%) had PSA less than 10 ng/ml, 10 (20.4%) had PSA between 10-20 ng/ml and 7(14.6%) had PSA more than 20 ng/ml[26].

Carcinoma Prostate is common tumor and almost one-third of patients when diagnosed, have distant metastasis[27]. In Germany, 12000 men died because of carcinoma prostate, and as a whole carcinoma prostate is the second leading cause of tumor-associated deaths in men[28]. In advanced stage or metastasis, the gold standard treatment is the suppression of testicular endocrine function. This treatment can cause remission in 90% of carcinoma prostate patients[29]. The growth rate of carcinoma prostate is controlled by androgens deprivation. In 1941 it has been shown that androgen deprivation (AD) is a better treatment to get temporary control of CaP growth[30]. Initially, bilateral orchidectomy as an androgen deprivation was considered definitive treatment. However, medical castration is adapted by Luteinizing hormone-releasing hormone (LHRH) analogues or by Gonadotropin-releasing hormone (GnRH) antagonists since 1980s'. When these patients are treated with LHRH analogues, there is initial increase of testosterone (flare up phenomenon). To control this initial surge of testosterone, antiandrogens are used along with LHRH analogues for 2-3 weeks. To achieve better quality of life in patients with marginal metastatic load, anti androgens can also be used as monotherapy. In comparison to castration, anti androgens have slightly shorter progression-free and overall survival rate[31]. Bilateral orchidectomy remains a better option showing the best results with the rapid outcome and minimal side effects[32]. Loss of testes has psychological impact on patients of CaP and therefore surgical castration is avoided in those patients[33]. Due to this reason, we believe that a clear knowledge about the tool as diagnostic method is of utmost importance in decreasing the morbidities as well as preventing the unfavorable effects of missed-diagnosis of prostatic cancer[34].

CONCLUSION

Incidental Carcinoma Prostate is fairly common in our population.

REFERENCES

1. Emberton M, Andriole GL, de la Rosette J, Djavan B, Hoefner K, Navarrete RV et al. Benign prostatic hyperplasia: a progressive disease of aging men. Urology 2003; 61:267–73.
2. Antunes AA, de Campos Freire G, Filho DA, Cury J, Srougi M. Analysis of the risk factors for incidental carcinoma of the prostate in patients with benign prostatic hyperplasia. Clinics 2010; 61:545-50.
3. Karakiewicz PI, Hutterer GC. Predictive models and prostate cancer. Nat Clin Pract Urol 2011; 5:82-92.
4. Minami Y, Tochigi T, Kawamura S, Tateno H, Hoshi S, Nishino Y et al. Height, Urban-born and prostate cancer risk in Japanese men. Jpn J Clin Oncol 2012; 38:205-13.
5. Bartsch G, Horninger W, Klocker H, Pelzer A, Bektic J, Oberaigner W et al. Tyrol prostate cancer demonstration project: early detection, treatment, outcome, incidence and mortality. Br J Urol Int 2011; 10:809-16.

6. Mitchell DM, Wynne CJ, Cowan I. Multiple cranial nerve palsies as the presenting features of prostate carcinoma. J Med Imaging Radiat Oncol 2011; 52:194-6.
7. Barry MJ. Clinical Practice. Prostate-specific–antigen testing for early diagnosis of prostate cancer. N Engl J Med 2001; 344:1373-7.
8. Corona G, Vignozzi L, Rastrelli G, Lotti F, Cipriani S, Maggi M. Benign prostatic hyperplasia: a new metabolic disease of the aging male and its correlation with sexual dysfunctions. Int J Endocrinol 2014; 2014:329456.
9. Schenk JM, Kristal AR, Arnold KB, Tangen CM, Neuhouser ML, Lin DW et al. Association of symptomatic benign prostatic hyperplasia and prostate cancer: results from the prostate cancer prevention trial. Am J Epidemiol 2011; 173:1419-28.
10. Shah AA, Sohu KM, Balouch I, Rind GH. Frequency of malignancy in clinically benign open transvesical prostatectomy- a study of 100 cases. Pak J Med Res 2012; 51:114-6.
11. Rasul G, Khan I, Jan MA, Ahmad T, Khattak IU, Aslam M. Frequency of incidental prostate cancer in patients presenting with palpable enlarged prostate gland. J Postgrad Med Inst 2019; 33:210-5.
12. urRehman A, Shohab D, Jamil MI, Akhter S. Frequency of prostate cancer in clinically benign prostate in patients underging transuretheral resection of prostate. Rawal Med J 2016; 41:320-2.
13. McVary KT. BPH: epidemiology and comorbidities. Am J Manag Care 2006; 12:S122–8.
14. Bostwick DG, Cooner WH, Denis L, Jones GW, Scardino PT, Murphy GP. The association of benign prostatic hyperplasia and cancer of the prostate. Cancer 1992; 70:291–301.
15. Ornstein DK, Rao GS, Smith DS, Andriole GL. The impact of systematic prostate biopsy on prostate cancer incidence in men with symptomatic benign prostatic hyperplasia undergoing transurethral resection of the prostate. J Urol 1997; 157:880–3.
16. Jones JS, Follis HW, Johnson JR. Probability of finding T1a and T1b (incidental) prostate cancer during TURP has decreased in the PSA era. Prostate Cancer Prostatic Dis 2009; 12:57–60.
17. Hammarsten J, Hogstedt B. Calculated fast-growing benign prostatic hyperplasia—a risk factor for developing clinical prostate cancer. Scand J Urol Nephrol 2002; 36:330–8.
18. Harkaway RC, Issa MM. Medical and minimally invasive therapies for the treatment of benign prostatic hyperplasia. Prostate Cancer Prostatic Dis 2006; 9: 204–14.
19. Merrill RM, Feuer EJ, Warren JL, Schussler N, Stephenson RA. Role of transurethral resection of the prostate in population-based prostate cancer incidence rates. Am J Epidemiol 1999; 150:848–60.
20. Zigeuner RE, Lipsky K, Riedler I, Auprich M, Schips L, Salfellner M et al. Did the rate of incidental prostate cancer change in the era of PSA testing? A retrospective study of 1127 patients. Urology 2003; 62:451–5.
21. Jin W, Fei X, Wang X, Song Y, Chen F. Detection and prognosis of prostate cancer using blood-based biomarkers. Mediators of Inflamm 2020; 2020:8730608.
22. Sakr WA, Grignon DJ, Haas GP, Heilbrun LK, Pontes JE, Crissman JD. Age and racial distribution of prostatic intraepithelial neoplasia. Eur Urol 1996; 30:138–44.
23. Thompson IM, Goodman PJ, Tangen CM, Lucia MS, Miller GJ, Ford LG et al. The influence of finasteride on the development of prostate cancer. N Engl J Med 2003; 349:215–24.
24. Walz J, Graefen M, Chun FKH, Erbersdobler A, Haese A, Steuber T et al. High incidence of prostate cancer detected by saturation biopsy after previous negative biopsy series. Eur Urol 2006; 50:498–505.
25. Jones JS. Saturation biopsy for detecting and characterizing prostate cancer. Br J Urol Int 2007; 99:1340–4.
26. Araujo LH, dos Anjos GC, Bigarella M, dos Reis ST, Srougi M, Antunes AA. PD26-11 Analysis of incidental prostate carcinoma in 1,106 patients undergoing BPH surgery in a developing country. J Urol 2014; 191:e763.
27. Shariat SF, Semjonow A, Lilja H, Savage C, Vickers AJ, Bjartell A. Tumor markers in prostate cancer I: blood-based markers. Acta oncol 2011; 50:61-75.
28. Gesellschaft der EpidemiologischenKrebsregister in Deutschland e.V. und das RKI, Berlin, Germany, 7th edition, 2010.
29. Lam JS, Leppert JT, Vemulapalli SN, Shvarts O, Belldegrun AS. Secondary hormonal therapy for advanced prostate cancer. J Urol 2006; 175:27–34
30. Huggins C, Hodges CV. Studies on Prostatic Cancer. The effect of castration, estrogen and androgen injections on serum phosphatases in metastatic carcinoma of the prostate. Cancer Res 1941:293–7.
31. Kaisary AV, Iversen P, Tyrrell CJ, Carroll K, Morris T. Is there a role for antiandrogen monotherapy in patients with metastatic prostate cancer?. Prostate Cancer Prostatic Dis 2001; 4:196–203.
32. Schostak M, Miller K, Schrader M. Hormone therapy for prostate cancer—immediate initiation. Front Radiat Ther Oncol 2008; 41:49–57.
33. Sharifi N, Gulley JL, Dahut WL. Androgen deprivation therapy for prostate cancer. J Am Med Assoc 2005; 294:238–44.
34. Ziglioli F, Granelli G, Cavalieri D, Bocchialini T, Maestroni U. What chance do we have to decrease prostate cancer overdiagnosis and overtreatment? A narrative review.

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CONTRIBUTORS

MN conceived the idea, made plan for the project, collected data and prepared initial draft. RU and MI helped execution of the plan, collected and interpreted data and finalized bibliography. MI and RAK helped in data acquisition and interpretation, refining the manuscript, statistical analysis and corrections of the final draft. All authors contributed significantly to the submitted manuscript.