

# Radiological Profile of Patients with Benign Prostate Hypertrophy.

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## ABSTRACT

**Background:** As TRUS-guided prostate biopsy is associated with significant complications, preventing unnecessary biopsies becomes very important. TRUS-guided prostate biopsies also raise the diagnostic rate of clinically insignificant prostate cancer. **Objective:** To study the radiological profile of patients with benign prostatic hyperplasia. **Methods:** A hospital based cross sectional study was carried out among 40 patients. Their informed consent was obtained. The patients were referred from Urology department. Digital rectal examination and trans rectal ultrasonography was performed for all patients. The results were expressed as percentages. **Results:** 24 patients were in the age group of 51 to 71 years. The least age group subjected to in the study was the patients below the age of 40 years. 35% of the patients studied in the present study had diffuse enlargement of the prostate. In addition, it can be observed that 65% of the patients studied in the present study had focal nodular benign prostatic hyperplasia. **Conclusion:** Benign prostatic hyperplasia was found common in the elderly patients.

**Keywords:** Prostate gland, Benign, Clinical.

## INTRODUCTION

Biopsy is required for the histological diagnosis of prostate cancer and transrectal ultrasound (TRUS) - guided prostate biopsy is currently the standard route for gaining prostate tissue for histological examination. However, benign prostate hyperplasia (BPH) and prostatitis are the two commonly observed conditions resulting in prostate-specific antigen (PSA) elevation leading to a prostate biopsy. As TRUS-guided prostate biopsy is associated with significant complications, preventing unnecessary biopsies becomes very important. TRUS-guided prostate biopsies also raise the diagnostic rate of clinically insignificant prostate cancer. Various molecular biomarkers or imaging modalities have been suggested to increase the diagnostic accuracy of prostate biopsy, yet none of these methods is available for widespread use either due to lack of standardization and regional availability, or high cost.<sup>[1]</sup>

Hastak et al<sup>[2]</sup> estimated prostatic size using both DRE and TRUS in 75 patients undergoing surgery for benign prostatic hypertrophy. The estimated size was then compared with the amount of tissue removed at the time of surgery. The authors demonstrated that TRUS was more accurate than DRE in estimating the prostate volume.<sup>[1]</sup>

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## MATERIALS AND METHODS

Type of study: Hospital based cross sectional study

Study duration: Two years

Sample size: 40 patients presenting with symptoms related to prostate

Ethical consideration: Institutional Ethics Committee Permission was taken before the start of the study. Individual informed consent was obtained from all the study participants.

Procedure: All the scans during the study were performed with the patient lying in a left lateral decubitus position. A self-administered enema is routinely being used before transrectal ultrasonography for all the patients. Digital rectal examination was done for all the patients before probe insertion to co-relate the imaging with any abnormalities on physical examination and to ensure that they are and to ensure that there are no rectal abnormalities that could interfere with the scan.

During the study, the transrectal scans were oriented such that the rectum is displayed at the bottom of the screen with the ultrasound beam emerging from within the rectum.

On axial imaging, the anterior abdominal wall is at the top of the screen to the right side of the patient on the left side of the image.

In sagittal section, the anterior abdominal wall is again located at the top of the screen and the head of the patients is on the left side of the image.

During the study ultrasound guided prostate biopsies were done to patients where there is a high index of clinical suspicion of malignancy and to the patient's presentation with prostate lesion during trans rectal ultrasonography of prostate, i.e. hypo echoic lesions in the prostate and is echoic lesion with the increase color Doppler signals.

During the study transrectal ultrasound, guided prostate biopsies were performed with 18-gauge auto core biopsy needle. Length of the needle used was 25 cm.

Informed consent was taken from the patients before attempting the biopsy procedure.

Routinely antibiotic ciprofloxacin in the dose of 500 mg was given orally before the transrectal ultrasonography guided biopsy and the same dose continued for another three days in order to reduce the incidence of septic complications. Trans rectal biopsies were performed with biopsy kit attached to the probe.

## RESULTS

**Table 1:** Age wise distribution of study subjects.

Age in years	Number	Percentage
< 40	3	8
41-50	4	10
51-60	14	35
61-70	10	25
71-80	9	22
Total	40	100

Out of 40 patients who were studied in the present study, more than half of the patients, i.e. 24 patients were in the age group of 51 to 71 years. The least age group subjected to in the study was the patients below the age of 40 years.

**Table 2:** Comparison of results of benign prostatic hyperplasia.

Studies	Diffuse enlargement of prostate	Focal nodular benign prostatic hyperplasia
Rifin et al <sup>3</sup>	23%	77%
Present study	35%	65%

[Table 2] shows the comparison of results of benign prostatic hyperplasia. It is seen from the above table that 35% of the patients studied in the present study had diffuse enlargement of the prostate. In addition, it can be observed that 65% of the patients studied in the present study had focal nodular benign prostatic hyperplasia. It means that the patients with focal nodular benign prostatic hyperplasia were more in proportion as compared to patients with diffuse enlargement of the prostate. Similar findings were reported by Rifin et al<sup>3</sup> in their study where they found that 23% of the patients studied by them were having diffuse enlargement of the prostate compared to 77% of the patients with focal nodular benign prostatic hyperplasia.

Twenty patients showed various degrees of enlargement of the prostate gland and were diagnosed as benign hypertrophy of the prostate gland. Some patients have shown enlargement of the median lobe onto the bladder. Some patients have shown a nodular enlargement of the transition zone compressing the normal peripheral zone. Of these 20 patients with enlarged prostate gland, seven patients showed evidence of diffuse glandular enlargement. The remaining 13 patients had nodular enlargement of the prostate.

## DISCUSSION

The present hospital based cross sectional study was carried out in relation to study the patients with benign hypertrophy of the prostate in the patients aged less than 40 years to more than 80 years.

Twenty patients in the present study have shown an increase in the size of their prostate gland and were diagnosed as benign prostatic hyperplasia. Of these 20 patients, 7 patients showed evidence of diffuse glandular enlargement comprising 35 percent of benign prostatic hyperplasia patients. The remaining 13 patients had nodular enlargement of the prostate. They constituted 65 percent of the total patients with benign prostatic hyperplasia.

The findings of the present study correlated well with the findings of Rifkin et al<sup>3</sup> who described sonographic changes commonly encountered in 51 patients with benign prostatic hyperplasia. 23 percent of these patients demonstrated extensive glandular involvement, whereas the remaining patients demonstrated clearly focal lesions.

The remaining fourteen patients comprising 33 percent (13 out of 40 patients studied) did not show any abnormality on digital rectal examination as well as on the transrectal ultrasonographic examination. All of them shown normal size of the gland, normal zonal anatomy, normal echo texture, normal capsule and the periprostatic fat planes along with normal seminal vesicles.

Cho JY et al<sup>4</sup> in their study reported that Transrectal ultrasound-guided biopsy of the hypoechoic lesions revealed prostate cancer in 20 patients and benign prostatic diseases in 19. Flow signals within the lesions were of increased/equal/decreased flow compared to surrounding normal tissue in 16/2/2 in the prostate cancer group and 3/9/7 in the benign disease group, respectively. The difference was statistically significant ( $p = 0.0003$ ). Resistive indexes of the lesion were 0.58-1.0 (mean 0.75) in the prostate cancer group and 0.57-1.0 (mean 0.80) in the benign disease group, and there was no significant difference between the two groups ( $p = 0.82$ ). If we consider an increased flow signal within a peripheral hypoechoic lesion as a sign of prostate cancer, color power Doppler ultrasound has a

sensitivity of 80%, a specificity of 84%, and an accuracy of 82%.

Ozden E et al<sup>[5]</sup> in a study carried out by them found that there were 7 (11.6%) patients with new hypoechoic lesions formed after the first biopsy. Histopathologic analysis of post biopsy-detected lesions showed that 38.5% were cancer; 62.5% of the detected benign lesions were prostatitis foci. They concluded that prostate biopsy does not give rise to the formation of fibrotic scar tissue in the peripheral zone. Most post biopsy-detected lesions are prostatitis foci, but all hypoechoic lesions must be sampled during repeated prostate biopsies because of the 38.5% cancer detection rate.

Al Nemer AM et al<sup>[6]</sup> carried out a study on 360 cases with a median age of 65 year-old. The BPH comprised the most (64.7%), while PCA accounted for 89 cases, 13.5% of which were incidental. Most cases of both BPH and PCA were diagnosed in the seventh decade. The frequency of diagnosing PCA did not show a solid rise or fall over time. Chronic inflammation is more related to BPH than to PCA. Only CI showed a significant statistical association with AUR.

Mosli HA et al<sup>[6]</sup> in their study found that BPH with inflammation in 20.3% and inflammation alone in 4.2%. In specimens of TURP or a simple prostatectomy for apparently benign disease, incidental PCA was detected in 14/93 (15%). The Gleason sum of  $\geq 6$  was found in 92.8% of patients.

Abdel-Meguid TA et al<sup>[8]</sup> found that A total of 214 patients were selected with an age ranging from 37-100 years (median=68). Inflammation was histologically evident in 88 patients. Of them, only one demonstrated acute inflammation, while 87/88 demonstrated chronic inflammation with, or without acute inflammation. Histopathologic features were categorized into 3 main categories: inflammation alone (12/214, 5.6%), BPH category (126/214, 58.9%), and cancer category (76/214, 35.5%) patients. The last 2 categories also included cases associated with inflammation. In the overall analysis of 214 specimens, BPH with inflammation was more prevalent than cancer with inflammation (43/214 [20.1%] versus 33/214 [15.4%]). In a subgroup analysis within each category, inflammation was less prevalent in the BPH category compared to the cancer category (43/126 [34.1%] versus 33/76 [43.4%]).

Delongchamps NB et al<sup>[9]</sup> found that Inflammation was present in 113 (67.6%) of 167 cases. Chronic inflammation was identified in 88 (53%), acute inflammation in 6 (4%), and chronic inflammation and acute inflammation in 19 (11%) glands.

## CONCLUSION

Out of 40 patients who were studied in the present study, more than half of the patients i.e. 24 patients

were in the age group of 51 to 71 years. The least age group subjected to in the study were the patients below the age of 40 years. The patients with focal nodular benign prostatic hyperplasia were more in proportion as compared to patients with diffuse enlargement of prostate.

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