Original Article

# Correlation of transrectal ultrasonographic findings with histo pathology in prostatic cancer

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## ABSTRACT

**Objective:** To estimate the incidence of hyperechoic, hypoechoic, isoechoic, prostatic cancer in TRUS (transrectal ultrasound guided) guided prostatic specimens. **Materials and Methods:** Four hundred and ninety three patients with raised serum prostatic specific antigen (PSA) and abnormal DRE findings were subjected to TRUS-Guided prostate biopsy. Lateralized sextant biopsy plus prostatic cores from suspicious areas were obtained. **Results:** Out of 493 patients who were enrolled in the study, 65 (13.18) patients showed hyperechoic lesions on TRUS and 211 (42.79) patients had hypoechoic lesions on TRUS. **Conclusion:** Our study has revealed that hyperechoic lesions on transrectal ultrasonography have more chances of prostatic cancer as reported in previous literature, so we suggest that we should take additional biopsy of hyperechoic lesions and perhaps it should be part of the standard protocol in patients suspected cancer prostate.

**Key words:** Pca, prostatic cancer, serum prostatic specific antigen, serum psa, transrectal ultrasonography, transrectal ultrasound guided

## INTRODUCTION

Prostatic cancer (Pca) is the most frequent neoplasia in men and second cause of cancer death in males. The incidence of prostatic cancer has increased over 50% and death from the disease by 40%.[1] The application of TRUS by Wantanabe *et al.*,[2] Holm and Gammlgard[3] has significantly contributed to the early diagnosis of prostatic cancer. The TRUS- guided systematic prostate biopsy is the Gold standard for diagnosis of prostate cancer.[4] TRUS, also enables visualization of suspected lesions.[5] Although, a TRUS-guided biopsy protocol regarding the number of biopsy cores as not yet been established. The number of biopsy cores taken per biopsy varies from 4-30.[6] The number of biopsies are been increasing, the exact value of these additional biopsies is still unknown.

Hyperechoic lesions are usually considered as benign like benign prostate hyperplasia, prostatitis or infarction.[5] On TRUS, prostatic cancer is visualized as a hypoechoic lesion in 60% to 70% and as an isoechoic lesion in 30% to 40% of cases, hyperechoic lesion are rare with an incidence of 1.5%.[7]

The aim of this study was to estimate incidence of TRUS-hyperechoic, hypoechoic and isoechoic prostate cancer in TRUS guided specimens.

## MATERIALS AND METHODS

This prospective study included a series of 493 patients having lower urinary tract symptoms (LUTS) with abnormal digital rectal examination and prostatic-specific

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|---|---|
| Quick Response Code: | Website: www.jehp.net |
| | DOI: 10.4103/2277-9531.131917 |



This article may be cited as: Ganie FA, Wanie MS, Ganie SA, Lone H, Gani M, Mir MF, *et al*. Correlation of transrectal ultrasonographic findings with histo pathology in prostatic cancer. J Edu Health Promot 2014;3:38.

antigen (Psa) level less than 27 ng/ml with mean age (58.5) years. Prior to (transrectal ultrasound guided prostatic biopsy) TRUS-guided biopsy, a 3 days course of an oral fluoroquinolone was given, patient was instructed to give self administered cleansing enema (sodium-phosphate, dibasic sodium) prior to biopsy. Patients who where on aspirin or NASIDS were discontinued for 7 days and 3 days, respectively.

All study patients served as both the experimental and control groups. Each patient underwent TRUS (transrectal ultrasonography) and biopsy was taken from suspected lesions found on TRUS and were classified as hypo or hyperechoic, or isoechoic, and mix lesion considered as hypoechoic. We used a Siemens SI-400 ultrasound device with biplane transrectal probe, Siemens 5.0/7.5 MHz type 5727 LE.

### 888 (Siemens, Munich, Germany)

Biopsy was performed by using a spring-loaded biopsy gun and an 18-G biopsy needle (CR Bard, Covington, Ga, USA) the patients were positioned in either the right or left lateral decubitus position for procedure without anesthesia. A topical anesthetic ointment was applied to the anal canal. Rectal ultra was performed first measurement of prostate volume. TRUS was performed in a detailed, fasion biopsy cores were taken laterally from base, mid and apex of the prostate on the right side (cores 1 to 3) respectively and then left side 4 to 6, respectively. An additional biopsy was taken from a suspicious area on TRUS. Cores from these areas were inked on the distal margins and submitted to pathology, in accordingly marked separate containers providing correct correlation between TRUS and pathological findings. Patients with positive cores obtained from hypo or hyperechoic TRUS lesions were included in the hypo or hyperechoic groups, the biopsy specimens were histopathologically analyzed and cancer graded according to the Gleason score system.

The results were analyzed statistically using Chi-square test and student's t-test with $P < 0.05$ level of significance.

## RESULTS

In our study, patients who had serum psa <4.0 three patients (0.6) had hyperechoic lesion and 20 (4.0) patients had hypoechoic lesions. The patients who had serum psa between 5-10 among them 15 (3.04) patients had hyperechoic and 44 (8.92) patients had hypoechoic lesions. The patients who had serum psa between 10-20, 20 (4.05) patients had hyperechoic lesion and 63 (12.77) patients had hypoechoic lesion. The patients who had serum psa between 20-27 and more 27 (5.47) patients had hyperechoic and 84 (17.0) patients had hypoechoic lesions.

Out of 493 patients who were enrolled in the study, 65 (13.18) patients showed hyperechoic lesions on TRUS and 211 (42.79) patients had hypoechoic lesions on TRUS [Table 1].

In our study, 70 (14.1) patients had isoechoic lesions on TRUS, which were positive on histopathology as prostatic carcinoma with Gleason score of 4-9. 25 (5.07). Sixty five (13.18) patients had hyperechoic lesions on TRUS among them 25 (5.07) patients were positive for prostatic carcinoma with Gleason score of 6-9, and 211 (42.79) patients had hypoechoic lesions on TRUS among them, 205 (41.5) patients had prostatic carcinoma on histopathology with Gleason score of 5-9 [Table 2].

## DISCUSSION

It is still believed that TRUS-guided biopsy is the only accurate pre-operative method for early diagnosis of prostatic carcinoma. The average number biopsies taken has been increasing but sextant biopsies are still used.[8] In our study, hypoechoic lesions were found in 211 (42.79) patients among them 205 (41.5) patients had prostatic carcinoma and 65 (13.18) patients had hyperechoic lesions on TRUS among them, 25 (5.07) patients had prostatic carcinoma, 217 (44.0) patients had normal TRUS among them, 70 (40.1) patients proved to be positive on histopathology In our study, the number of prostatic carcinoma diagnosed were higher as compared with the study conducted by VO *et al.*[9]

A review of literature shows very rare findings of prostatic cancer originating in hyperechoic lesions the reported incidence is 1% to 5%.[10] Egawa, *et al.* has done TEUS before radical prostatectomy in 157 patients with prostate cancer and hyperechoic cancers were present only in two patients (1.3%).[10] Shinohara, *et al.*[11] diagnosed 70 carcinomas of which only 1 (1.4%) were hyperechoic. Malik, *et al.*[12] had done biopsies in 100 patients suspected prostatic cancer and diagnosed 23 carcinomas none which was hyperechoic, our findings 65 (13.18) patients had hyperechoic lesions on TRUS and among them, 25 (5.07) indicated a higher rate of hyperechoic cancers then that reported in the literature.

**Table 1: Results of prostatic specific antigen and transrectal ultrasonography findings in patients**

| Psa (ng/ml) | TRUS | | | Total |
|---|---|---|---|---|
| | Isoechoic | Hyperechoic | Hypoechoic | |
| <4.0 | 15 (3.04) | 3 (0.6) | 20 (4.0) | 38 |
| 5-10 | 61 (12.37) | 15 (3.04) | 44 (8.92) | 120 |
| 10-20 | 67 (13.59) | 20 (4.05) | 63 (12.77) | 150 |
| 20-27 | 74 (15.0) | 27 (5.47) | 84 (17.0) | 185 |
| | 217 (44.0) | 65 (13.18) | 211 (42.79) | 493 |

PSA = Prostatic specific antigen, TRUS = Transrectal ultrasonography

**Table 2: Transrectal ultrasonography findings in diagnosed carcinoma *N*=493**

| TRUS findings | Cases | Gleason score |
|---|---|---|
| Isoechoic carcinoma | 70 (14.1) | 4-9 |
| Hyperechoic carcinoma | 25 (5.07) | 6-9 |
| Hypoechoic carcinoma | 205 (41.5) | 5-9 |
| | 300 (60.85) | |

TRUS = Transrectal ultrasonography

## CONCLUSION

Our study suggest that we should take additional biopsy of hyperechoic lesions and it should be part of the standard protocol in patients suspected cancer prostate.

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**Source of Support:** Nil, **Conflict of Interest:** None declared