Role of Trans Rectal Ultrasonography in Evaluation of the Prostate

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ABSTRACT

Introduction: The biopsy rate for both TRUS and DRE was available only in the study done by Lee et al. They reported that a biopsy was recommended in 3.7% (29 out of 784) of the men tested by DRE and in 7.9% (62 out of 784) of the men tested by TRUS. Thus, both the detection and biopsy rate were approximately twice as high with ultrasonography. Objective of the research was to study the role of trans rectal ultrasonography in evaluation of the prostate.

Material and Methods: This hospital based cross sectional study was conducted for a period of 18 months. 40 patients of age 35 to 80 years were evaluated by transrectal ultrasonography using a 7.5 MHz endorectal probe. Institutional Ethics Committee permission was obtained and informed consent was taken from the patients before they were recruited in the study.

Results: Five patients showed evidence of hypoechoic lesions in the peripheral zone and were diagnosed as prostatic carcinoma. One patient had irregularly enlarged prostate gland. One out of 40 patients were diagnosed as chronic prostatitis.

Conclusion: transrectal ultrasonography was found to be more sensitive than the digital rectal examination.

Keywords: Evaluation, Trans rectal ultrasonography, Sonograms

INTRODUCTION

Watanabe and associates have proposed diagnostic criteria for the purpose of differentiating the prostatic disorders which were late approved as the official criteria of the Japan Society of Ultrasonics in Medicine and the Japanese Urological Association.¹

In 1985, Lee and associates established the Hypoechoic lesion as a sign of the cancer focus and this had great of the cancer focus and had great impact on the advancement of early cancer detection by transrectal ultrasonography.²

In 1988, Wanatabe and associates have undertaken a mass screening program for prostatic disease with transrectal ultrasonography. They have screened 6529 men over the age of 55 years detecting 42 cases of prostatic carcinoma (0.6%) and 1405 cases of benign prostatic hyperplasia - 21.5%).³

Lee and associates conducted the largest published screening trial with transrectal ultrasonography and co-workers who screened 784 self referred men using both digital rectal examination and transrectal ultrasonography. Overall 77 biopsies were done, 83% initiated by transrectal ultrasonography and 38% by digital rectal examination. Cancer was detected in 22 patients or 2.8% of the men screened. Digital rectal examination detected 10 tumors and transrectal ultrasonography detected 20 tumors (2.6% of the men screened). They suggested that transrectal ultrasonography (TRUS) is twice as sensitive as digital rectal examination (DRE) in detecting small prostatic cancers.⁴

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MATERIAL AND METHOD

This hospital based cross sectional study was conducted for a period of 18 months. 40 patients of age 35 to 80 years were evaluated by transrectal ultrasonography using a 7.5 MHz endorectal probe. Institutional Ethics Committee permission was obtained and informed consent was taken from the patients before they were recruited in the study.

Patients presenting with symptoms of prostatism either in the form of irritative symptoms or obstructive symptoms, patients with abnormal digital rectal examination in the form of asymmetry of the gland, tenderness and presence of hard nodules were included in the study.

All the patients were investigated on WiproGE Logic 400 MD Ultrasound machine. The transducer used for the study is an end viewing transducer with variable frequency ranging from 5-7.5 MHz that allows for multiplanar imaging in semi coronal and axial projections. The transducer is provided with a stainless steel biopsy guide and attachments for TRUS guided biopsies of the prostate. Data was entered in the Microsoft Excel Sheet and analyzed.

RESULTS

Out of 40 patients who underwent trans rectal ultrasonogra-
The present study was conducted on patients with age group ranging from 35 to 80 years. All these patients presented with urologic symptom and were referred to the Radiology department for evaluation of the prostate by Trans rectal ultrasonography.

All the patients were subjected to thorough digital rectal examination prior to being subjected Trans rectal ultrasonography. Of the six patients who were confirmed of having prostate cancer, one patient showed hard indurated prostate gave a value of 2.5% cancer detection rate for digital rectal examination. In the study conducted by Lee et al they used Trans rectal ultrasonography it was 2.6% (20 out of 784 patients studied). In another study conducted by Wanatabe et al who screened 6529 men over the age of 55 years, 42 cases were diagnosed as prostatic carcinoma or surgical biopsy in the present study giving the cancer detection rate of 15% (6 out of 40 patients). In the study conducted by Lee et al they the cancer detection rate by Trans rectal ultrasonography was 2.6% (20 out of 784 patients studied). In another study conducted by Shinohara et al on 98 patients of prostatic carcinoma, 67% were found to have hypo echoic lesions and 32% were identified as having iso echoic lesions where as only one percent showed evidence of hyper echoic lesion.

Kelly IM et al in their study on 456 patients with possible prostate cancer found that The frequency of malignancy was 47% (75 of 158). Of 136 TRUS-positive cases, 72 were malignant and 64 benign. Of 84 CDI-positive cases, 65 were malignant and 19 benign (chi 2 = 12.18, P < .001). Thirteen percent of histopathologically proved cases (10 of 75) were normal at CDI. TRUS alone had a sensitivity of 96% and a positive predictive value (PPV) of 0.53. The addition of CDI increased the PPV to 0.77 but reduced the sensitivity to 87%.

DISCUSSION

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percentage of isoechoic PC. Over the past decade, the sextant biopsy technique has emerged as the standard of care in the detection of PC. However, limitations in cancer detection have been appreciated, particularly a false-negative rate approaching 20%. This high failure rate has led investigators to refine biopsy techniques to improve cancer detection and to increase the total number of cores. Currently, recommendations include increasing the biopsy number to a minimum of 10-12 cores, including sampling of the lateral prostate. Refinements in imaging technologies (power Doppler sonography, microbubble intravenous sonographic contrast agents, and MR spectroscopy or dynamic contrast MR imaging) should eventually improve targeting of prostate needle biopsy and reduce false-negative biopsies. Tang J et al found that Transrectal ultrasonographically guided biopsy of the hypoechoic lesions revealed prostate cancer in 30 patients and benign prostatic diseases in 36. Tayib AM et al observed that Out of the 45 patients who underwent TRUS guided biopsy; cancer of the prostate was detected in 13 (28.8%). The cancer detection rate in patients presented with abnormal DRE alone was 7.6%, and was 15.3% in the group with elevated Ukimura O et al in their study concluded that MR-TRUS fusion-image-guided biopsies outperformed systematic biopsies. TRUS-visibility of a MR-suspicious lesion facilitates image-guided biopsies, resulting in higher detection of significant cancer. Maxeiner A et al reported that Real-time MR/US fusion increases detection rates of PCa in patients undergoing repeat biopsy. Especially, clinically significant PCa with a Gleason score ≥ 7 were almost exclusively detected by MR/US fusion-guided biopsy.

REFERENCES
