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Trans Rectal Ultrasonography as A Diagnostic Modality in Evaluation of Prostatic Symptoms

KEYWORDS: Prostatic cancer, TRUS

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ABSTRACT *Prostatic diseases can be expected to affect most men at some point of their life.1 A variety of diseases affect prostate. Prostatic carcinoma is the third most common cause of cancer2. Benign prostatic hyperplasia is another condition which affects more than 80% of the men. However, the common age of occurrence of BPH is after 80 years. It leads to various symptoms of urinary tract obstruction2 which are termed as Lower Urinary Tract Symptoms. Prostatitis is an inflammatory condition of prostate common in young adults associated with genitourinary infection4. Some other conditions like Prostatic cysts may be congenital or acquired can often lead to infertility in men1, 2.*

The management of patients with prostatic conditions mainly relies on history taking, clinical examination and investigational modalities which additionally provide information for accurate diagnosis and later follow-up. The use of ultrasound has opened the door for further modalities to follow.

Hence, it is important to diagnose and differentiate these conditions so that early treatment can be given and eventually reduce mortality and morbidity of the patients. However, the knowledge of use of TRUS in diagnosis and treatment of prostatic diseases is still scant. Hence it was decided to take up this study in this part of the country to evaluate TRUS as diagnostic modality on prostatic symptoms.

INTRODUCTION

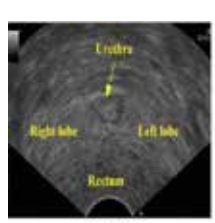
Urologists have incorporated trans-rectal ultrasonography (TRUS) of the prostate into their practices. Trans-rectal ultrasound (TRUS) uses sound waves to make an image of the prostate on a video screen. For this test, a small probe that gives off sound waves is placed into the rectum. The sound waves enter the prostate and create echoes that are picked up by the probe. A computer turns the pattern of echoes into a black and white image of the prostate. TRUS may be used on its own way to look at the prostate[3], but it is mostly used during a prostate biopsy to guide the needles into the right area of the prostate.

TRUS has both diagnostic and therapeutic indications in prostatic diseases. TRUS has got its own value in diagnosis of prostate cancer. However some of the possibilities of TRUS are undisputed[4], such as volume measurement of the prostate and guidance of prostate biopsies to areas of interest. TRUS as a means for early detection of prostate carcinoma is still a point of discussion due to the non – uniform appearance of the malignancy. TRUS is widely used in delivery of treatments such as brachytherapy, and also to monitor cryotherapy. The evaluation of the end finding probes has further enhanced urologist's ability to monitor the entire process of prostate biopsy. TRUS is also used planning of treatment with brachytherapy, cryotherapy or minimally invasive BPH therapy (eg. radiofrequency, microwave)[5]. In addition, TRUS is also used to evaluate prostate volume during hormonal downsizing for brachytherapy. TRUS is also used in the evaluation of men with azoospermia to rule out ejaculatory – duct cysts, seminal vesicle cysts, mullerian cysts or urticular cysts.[6]

Hence this study has been undertaken to know the use of TRUS as a diagnostic modality in Prostatic symptoms.

MATERIALS AND METHOD

- A total number of 100 patients with prostatic symptoms were enrolled in this study.
- Detailed history along with general, systemic and local examination was done.
- Investigations like serum PSA levels and per abdominal ultrasonography was done before subjecting the patient for TRUS.
- A transducer probe was carefully introduced into the rectum in both sagittal and axial plane.
- The images were displayed by analysing the echos created by the sound waves.
- The TRUS probe used here were a 5-8 mhz hand-held, high-resolution probe with multi axial planar imaging capabilities.



Axial plane

Sagittal plane

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OBSERVATION AND RESULT-

- Our study included 100 cases of which nodules were present in 25 %, abscess in 8%, cyst in 13 %, and prostatitis in 8% and seminal vasculitis in 3% of patients.
- The mean PSA (prostate specific antigen) level in the 25 % cases of prostatic nodules was 6.22 with standard deviation being 6.86.

Table 1-
TRUS FINDINGS OF STUDY GROUP

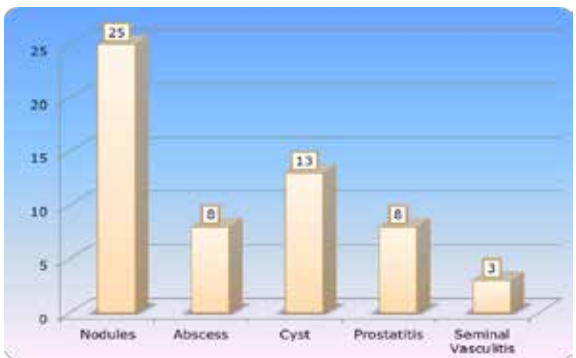

Table 2
Relation between per rectal examination and PSA, Prostate volume by USG and TRUS in the study group

	Normal prostate	Difficult to reach upper border	Unable to reach upper border	F value	P value, Significance
	Mean ± SD	Mean ± SD	Mean ± SD		
Serum PSA (ng/mL)	3.56 ± 3.99	4.23 ± 4.44	9.87 ± 3.66	6.243	0.003, Sig
Prostate volume (USG) cm^3	49.5 ± 39.16	34.64 ± 10.06	49.13 ± 8.18	7.887	0.001, Sig
Prostate volume (TRUS) cm^3	42.5 ± 21.79	35.05 ± 9.61	47.5 ± 10.06	6.178	0.003, Sig

A similar study done by clark et al[3] revealed that more than half of patients with PSA of level of more than 10 ng/mL had prostate cancer. TRUS findings at the time of biopsy were a strong predictor of cancer in the patient who had abnormal PSA level.

CONCLUSION

1) Though we randomly and daily use transabdominal ultrasonography for the study of prostatic diseases, it has limited itself to the prevoid/postvoid and volume study of the prostate[7].
2) Through TRUS however it was easy to diagnose a variety of prostatic conditions/diseases such as prostatic nodules, cyst, abscess, prostatitis and seminal vasculatis along with BPH[8].
3) TRUS is also valuable in early screening of prostate cancers.
4) TRUS is also a superior investigation to accurately measure prostate volume.
5) However TRUS is operator dependent hence requires expertise in the field.

Hence we recommend TRUS as diagnostic modality in evaluation of prostatic symptoms.

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