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Utility of Transrectal Ultrasound with Power Doppler Imaging Guided Biopsy in the Detection of Prostate Cancer

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Abstract: *evaluate the utility of trans rectal ultrasound with power Doppler imaging guided biopsy in comparison with grey scale imaging in the detection of prostate cancer, 10 core biopsy being the reference standard*

I. Introduction

A prospective study was conducted in the time period between July 2006 and May 2009. All the patients more than 50 years who presented to the Urology OPD with LUTS with abnormal digital rectal examination and/or PSA>=4 ng/ml were evaluated for inclusion in the study.

Exclusion criteria

1. No consent for study
2. Persistent urinary tract infection
3. Untreated coagulopathy

After obtaining informed consent all the patients were enrolled into the study. Routine clinical evaluation was done as per the proforma and the findings were recorded. All the patients were evaluated by TRUS. On the day prior to the procedure, ciprofloxacin 500mg bd and metronidazole 400 mg tds was prescribed, which was continued for 2 days post procedure. PC enema was given on the day of the procedure.

Intravenous pethidine was given as analgesic if the patient did not tolerate pain. Patients were examined using the SSD2000 System (Aloka, Japan); PDUS was carried out with a Power Flow Unit and 7.5 MHz broadband endoluminal probe. The patients were examined in the left lateral decubitus position. All patients underwent greyscale TRUS of the entire prostate gland in the sagittal plane, from the right to left lateral aspects of the gland and in the axial plane from the seminal vesicles to the apex. The size and weight of the gland were calculated from the anteroposterior, transverse and cranio caudal measurements ($0.52 \times D1 \times D2 \times D3$). PDI was performed using the same ultrasound system as for conventional TRUS. The power Doppler gain was set to a point below the range at which blood flow in the neurovascular bundles was identified with no background artefact. Scanning to detect flow was continued for 10 min in each patient. The vascularization of a hypoechoic lesion in the PZ was evaluated by comparison with that of the area surrounding it. When a hypoechoic lesion contained more vessels than other PZ areas, it was defined as a hypervascular area. Equivocal and isoechoic lesions were defined as hypervascular area when these lesions were seen as abnormal vascular areas. All patients underwent systematic core biopsies initially at the hypervascular areas and hypoechoic areas if seen and then standard 10 core biopsy was taken from the prostate. 18 G (Bard Urological, Covington, GA) automatic core biopsy needles were used. Biopsy samples from each site were placed in separate containers of formalin and labelled as to the site of origin. The biopsy results were analysed statistically to evaluate the differential efficacy of the hypoechoic nodule and hypervascular areas

II. Conclusion

Power Doppler imaging guided hypervascular area directed biopsy is efficient in the detection of prostate cancer in comparison with hypoechoic nodule directed biopsy.

Suggestions

Power Doppler guided targeted biopsy of hypervascular area, may be combined with extended core biopsy to increase the yield of core biopsy

Acknowledgements

An acknowledgement section may be presented after the conclusion, if desired.(8)

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