Validation of Prostate HistoScanning™ in Localization of Prostate Carcinoma: The Indian Experience

Introduction and Objectives: Prostate HistoScanning™ (PHS), a new ultrasound-based technology which uses computer-aided analysis to quantify tissue disorganization induced by malignant processes, can identify and characterize foci of prostate cancer as compared with step-sectioned radical prostatectomy (RP) specimens. This study was done to determine the extent to which PHS can identify tumor foci that correspond to a volume of ≥ 0.50 mL.
Materials And methods: Between October 2011 and February 2012, 16 men underwent HistoScanning™ before scheduled radical prostatectomy. The three dimensional raw (grey-scaled) data required for HistoScanning™ analysis were acquired by transrectal ultrasonography, and analyzed using organ-specific tissue-characterization algorithms. The HistoScanning™ analysis results were compared with the histology of the whole mounted prostate, step-sectioned coronally at 5-mm intervals, and each slide analyzed by grid analysis.
Results: A total of 96 sextants were studied in 16 patients. The prostate size and the PHS identified lesion size were 13.49± 13.85 and 3.10± 2.06 ml. PHS correlated well with step sectioned radical prostatectomy specimen total tumor volume (Spearman's coefficient of rank correlation of 0.624, p=0.009). Thus, using the clinically accepted volume threshold of 0.50 mL, the sensitivity, specificity, positive and negative predictive value of HistoScanning™ were 94.4%, 50%, 85% and 75%, respectively.
Conclusion: PHS has the ability to accurately detect cancer foci more than 0.5 ml within the prostate. Further studies to explore its role for the preoperative imaging in cancer prostate are required.