
Podium Session 2: Prostate Cancer, Detection and Screening

Monday, October 17

15:15-16:45

POD-02.01

Detection of Prostate Cancer by HistoScanning™

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Introduction and Objective: HistoScanning™ is a tissue differentiation, visualization and quantification tool which identifies changes to solid organ tissues. It uses a specific three dimensional transrectal ultrasound device to acquire and transmit data to a computer program. Data is processed, differentiated, and suspicious areas in the prostate are projected in 3D. Our objective was to compare HistoScanning with histopathology of radical prostate specimens and to determine the HistoScanning sensitivity regarding to cancer volume and localization.

Materials and Methods: We analyzed the results of HistoScanning in 85 patients that underwent radical prostatectomy. All patients had ≥ 2 scans one day preoperatively; scan with the largest suspicious volume was used for evaluation. Suspicious lesions measured ≥ 0.2 ml were considered positive. All prostatectomy specimens were processed according to Stanford protocol and evaluated by an experienced uro-pathologist. HistoScan findings were correlated with final pathology according to localisation and volume. A match was defined positive as a HistoScan positive lesion in a correspondent histopathologically positive area. The results were analyzed according to pT-stadium, Gleason Score, PSA, cancerous tissue volume and volume of HistoScanning-lesions. **Results:** Mean patient age was 62.8 (48-75) years, mean PSA 11.83 (,1-68) ng/ml, mean prostate volume was 47.5 (19-250) ml and mean tumor volume was 4.80 (0.35-38) ml. There were 44 patients who had a pT2 tumor, 38 had a pT3 carcinoma (1 pt. pT4). Eight patients had salvage prostatectomy. Nine patients had a final Gleason Score (GS) 6, 50 and 18 pts had GS 7 and GS ≥ 8 respectively. HistoScanning had 74% overall sensitivity for detecting and locating prostate carcinoma. Only 55% of

these cases showed a good correlation for tumor volume. HistoScanning does not seem to be suitable for patients with salvage prostatectomy or pts undergoing neoadjuvant hormonal therapy. Sensitivity was higher for pT3 tumors (92%) than for pT2 carcinoma (61.36%). HistoScanning detected (5/9=55%) of GS 6, (37/50=74%) of GS 7 and 15/18=83% of GS ≥ 8 carcinoma. Preoperative PSA had no statistical significance. HistoScanning detected small (10/85) tumors (<1 ml) in =50%, intermediate (40/85) (1-5ml) in 57.5% and large (35/85) (>5ml) in 86% respectively. Similar results are seen regarding the volume of suspicious lesions. For small (6/85) (≤ 0.5 ml), intermediate (28/85) (0.5-2ml) and large (51/85) (>2ml) lesions, it correctly predicted prostate cancer localisation in 2/6=33%, 22/28 = 78,5 % and 33/51=64,7%, respectively.

Conclusion: HistoScanning seems to have a great potential in the detection of significant prostate cancer. In particular, extracapsular, poor differentiated and large prostate cancers show a high detection rate. However, larger prospective studies are needed to verify these preliminary results.

POD-02.02

A Novel Stereotactic Prostate Biopsy System Integrating Preinterventional MRI with Live US Fusion

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Introduction and Objective: A key challenge for prostate cancer therapy is to precisely diagnose tumor lesions. Here, we describe a novel stereotactic prostate biopsy system which integrates preinterventional MRI with peri-interventional ultrasound for perineal prostate biopsies.

Materials and Methods: Fifty men with suspicion of prostate cancer underwent multiparametric 3T-MRI (median age 67yrs, mean PSA 8.9ng/ml, mean prostate volume 51ml). Suspicious lesions were marked before the obtained data were transferred to the stereotactic biopsy system. Using a custom-made biplane TRUS probe mounted on a stepper, 3D-ultrasound data were generated and fused with the MRI. As a result, suspicious MRI-lesions were superimposed onto the TRUS-data. Next, 3D biopsy planning was performed including systematic biopsies