Real-Time Elastography for Prostate Cancer Detection: Preliminary Experience

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Abstract:

Purpose: To assess the value of real-time elastography in the detection of prostate cancer.

Methods and Materials: Fifteen patients with biopsy proven prostate cancer were
studied prior radical prostatectomy. Elastography was performed using a modified conventional ultrasound system (Voluson 730, GE) to analyze the unfiltered high-frequency signals computer-based in real-time. Elastography (= strain imaging) is capable to visualize displacements between ultrasonic image pairs of tissue under axial compression. Therefore differences in tissue architecture can be used to distinguish between normal and cancer tissue. The real-time elastography findings were compared with pathologic findings.

Results: Thirty-two foci of prostate cancer were present at pathologic evaluation, with multiple foci of cancer in 13 of the 15 glands. Real-time elastography detected 28 of 32 cancer foci (sensitivity: 88%). Four sites were false-positive with no pathological abnormality. The by patient analysis demonstrated that real-time elastography detected at least one cancer foci in each of the 15 patients.

Conclusion: Real-time elastography of the prostate is a sensitive new imaging modality for the detection of prostate cancer.