Clinical Usefulness of the Ultrasound Contrast Agent Perflubutane in the Diagnosis of Prostatic Cancer: A Prospective Clinical Trial

Introduction and Objective: This study's aim is to investigate the clinical usefulness of the novel ultrasound contrast agent Perflubutane in the diagnosis of prostatic cancer.
Materials and Methods: A preliminary study was carried out in December, 2009 under the approval of institutional review board for human investigation in our hospital. We here report the results in 686 consecutive cases between January 2010 and December 2011. Before prostate biopsy two urologists, J.A. and K.S. examined digital rectal examination (DRE), B-mode ultrasonography (BU), power Doppler ultrasound (PDU), and checked lesions of suspected cancer. After intravenous infusion of Perflubutane, targeted biopsies in the suspected lesions by each modalities including Perflubutane enhanced ultrasonography (PEU) and the 14-sites systematic biopsy were done. Sensitivity, specificity, PPV, NPV, and accuracy were compared between DRE, BU, PDU, and PEU.
Results: The average age of the subjects was 68 years (36-88) and the median PSA was 7.9ng/ml (0.6 - 4195). Of 686 cases 416 were prostate cancer (60.6%). The sensitivity, specificity, PPV, NPV, and accuracy were 52.9%, 63.3%, 69.0%, 46.6%, and 57.0% by DRE, 69.2%, 43.7%, 65.5%, 48.0%, and 59.2% by BU, 66.6%, 58.9%, 71.4%, 53.4%, and 63.6% by PDU, and 66.1%, 70.0%, 77.2%, 57.3%, and 67.6% by PEU, respectively. The PPV, NPV, and accuracy were significantly greater for PEU than for all other modalities.
Conclusions: This study demonstrated significantly improved diagnostic accuracy of prostate cancer with PEU. It needs further studies to clarify the difference of PEU features between prostate cancer and non-cancerous lesions.