

## **The role of three dimensional transrectal ultrasonography (3-D TRUS) and power Doppler sonography in prostatic lesions evaluation**

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### **Abstract**

Aim of work: To evaluate the role of three dimensional (3D), two dimensional (2D) as well as power Doppler transrectal ultrasound (TRUS) in diagnosis of different prostatic lesions.

Patients and methods: 2-D TRUS, power Doppler and Transrectal 3-D US were performed for 100 patients between April 2009 and April 2010. All patients had been examined clinically with digital rectal examination (DRE) and had serum prostatic specific antigen (PSA) level (total and free). Patient age ranges from 42 to 67 years and the mean age was 55 years. TRUS guided biopsies were done for 77 cases showing any of the followings: abnormal focal lesion with ultrasound, abnormal vascularity with power Doppler exam, abnormal DRE, elevated serum total PSA >4 ng/ml or when the percent-free PSA is 10% or less in an outpatient setting. The results were recorded and analyzed.

Results: 3-D TRUS was more sensitive, specific and more accurate than 2-D TRUS in detecting prostate cancer as it showed estimated sensitivity 78.9% and specificity 94.8% with total accuracy 90.9% with respect to an estimated sensitivity 63.1%, specificity 86.2% and total accuracy 80.5% with 2-D TRUS and was more accurate than 2-D ultrasound in identifying the capsular breaks with an estimated sensitivity 80% with respect to 40% with 2-D TRUS. Power Doppler showed 84.2% sensitivity in detecting prostatic cancer and was of 100% sensitivity in detecting prostatitis. 3-D TRUS was more accurate in estimating the volume of adenoma in cases of BPH with an estimated error not more than +6% with respect to an estimated error not more than +18% for 2-D TRUS.

Conclusion: 3-D transrectal ultrasound and power Doppler sonography have specific diagnostic capabilities which added significantly to the ultrasound in detecting and staging of prostatic cancer and in the planning for management .They proved highly valuable in the diagnosis of prostatitis and 3-D TRUS was more accurate than 2-D TRUS in estimating the volume of adenomas in patients with BPH.