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The role of three dimensional Transrectal Ultrasonography (3D TRUS) and power Doppler sonography in prostatic lesions evaluation

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

Materials & Methods: 2D TRUS, power Doppler and Trans-rectal 3D 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 following: 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: 3D TRUS was more sensitive, specific and more accurate than 2D 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 2D TRUS and was more accurate than 2D ultrasound in identifying the capsular breaks with an estimated sensitivity 80% with respect to 40% with 2D TRUS. Power Doppler showed 84.2% sensitivity in detecting prostatic cancer and was of 100% sensitivity in detecting prostatitis. 3D 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 2D TRUS.

Conclusion: 3D trans-rectal 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 3D TRUS was more accurate than 2D TRUS in estimating the volume of adenomas in patients with BPH.

Biography

Ashraf Talaat Youssef is currently working as Lecturer and Consultant of the Radio Diagnosis at Faculty of Medicine, Fayoum University, Egypt and was a Consultant of Radio Diagnosis in National Institute of Urology and Nephrology Cairo MBBCH Cairo University, MSc of Radio Diagnosis, Ain Shams University, Egypt. He is serving as a Reviewer and has many publications in reputed international journals.

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