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Role of serum prostate specific antigen and digital rectal examination findings in the histological diagnosis of prostate cancerP.G.A.N. Jayathilaka¹, M.A.D.N. Munasinghe¹, S.M. Fernandopulle¹, S.J. De S. Hewavisenthi²¹Department of Histopathology, Colombo North Teaching Hospital, Sri Lanka²Department of Pathology, Faculty of Medicine, University of Kelaniya, Sri Lanka

Introduction: Serum prostate-specific antigen (PSA) and digital rectal examination (DRE) are widely used in the early detection of prostate cancer.

Objectives: To determine the cancer detection rate by PSA and to compare the cancer detection by PSA alone and with PSA combined with DRE in patients undergoing transrectal ultrasound guided (TRUS) biopsies.

Methodology: All TRUS biopsies (including patients with lower urinary tract symptoms) performed at Colombo North Teaching Hospital during 2017-2020 were included. PSA levels, DRE and histological findings were retrieved. Cancer detection rate by PSA was calculated using the number of cancer patients with PSA >4 ng/ml as the numerator and all the patients with PSA >4 ng/ml as the denominator. To compare cancer detection by PSA alone vs PSA combined with DRE, data were plotted in two 2x2 tables for both methods separately. P-value was calculated for both methods using Chi-square test.

Results: 341 biopsies were included and 112 (32.8%) were malignant. 326/341 had elevated PSA levels >4ng/ml, and 109/326 had malignant histology. Cancer detection rate by PSA alone was 33.4% [sensitivity 97.3%, specificity 5.2% (12/229 non-cancer patients labelled as non-cancer)]. False positive rate (FPR) was 94.8% (217), false negative rate (FNR) was 2.7% (3), positive predictive value (PPV) was 33.4%, and negative predictive value (NPV) was 80.0% with a p-value of 0.402. When PSA was combined with DRE the sensitivity was 79.5%, specificity was 68.6%, FPR was 31.4% (72), FNR was 20.5% (23), PPV was 55.3%, and NPV was 87.2% with a p-value of <0.001.

Discussion and conclusion: The gold standard of diagnosis of prostate cancer is histology. During histological examination, cases with high PSA are more suggestive of cancer according to the literature. In this study, we suggest using both PSA and DRE findings (p-value <0.001) as supportive in the cancer diagnosis rather than using PSA alone (p-value 0.402) in the histological examination of TRUS biopsies.

Keywords: prostate, prostate specific antigen, transrectal ultrasound, digital rectal examination

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