

## **Histopathological Features and Their Association with Serum PSA Levels in Prostate Cancer Patients at the National Hospital Galle**

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Prostate cancer is the second most common cancer among men across the world and most of them are adenocarcinomas. Serum Prostate Specific Antigen (PSA) test is a more specific and powerful tool used for early detection of prostate cancer. Serum levels of PSA concentration with the Gleason grading system are used to differentiate prostate tumors. This study aimed to determine the profile of histopathological features and their association with serum levels of PSA in prostate cancer patients at the National Hospital, Galle. A cross-sectional study was conducted among patients diagnosed with prostate diseases including malignancies while excluding those with urinary tract infections and benign prostate hyperplasia. Data were collected retrospectively from archived laboratory records and clinic files from December 2019 to July 2024 after obtaining ethical approval from the Ethics Review Committee of the Faculty of Allied Health Sciences, University of Ruhuna. Data were analyzed using descriptive statistics, chi-square and Spearman's rank correlation with SPSS. A total of 246 prostate cancer patients with the mean age of  $69 \pm 8$  years were enrolled. The mean serum PSA concentration was  $37 \pm 42$  ng/mL. The most common histologic type was acinar adenocarcinoma with a mean tumour burden of  $42.25 \pm 28.8$  %. Perineural invasion (PNI) was present in 28% of patients, while lympho-vascular invasion (LVI) was observed in 10%. Forty-five percent of the study population had Gleason grade group 4 or 5 tumours. Serum PSA value had a significant association with PNI ( $p = 0.02$ ) but not with LVI ( $p = 0.162$ ). Gleason grade group was significantly associated with tumour size ( $p < 0.001$ ), PNI ( $p < 0.001$ ) and LVI ( $p = 0.002$ ). Serum PSA values showed a statistically significant positive correlation with both Gleason grade group ( $\rho = 0.597$ ,  $p < 0.001$ ) and tumour size ( $\rho = 0.505$ ,  $p < 0.001$ ). These findings emphasize the clinical value of serum PSA levels and histopathological features in assessing the aggressiveness of prostate cancer. Higher serum PSA values were significantly associated with higher Gleason grade groups and larger tumour size, suggesting that PSA can serve as a significant biomarker for predicting tumour behavior and guiding patient management.

**Keywords:** Gleason grade groups, histopathological features, prostate specific antigen, prostate cancer