**Low Pre-Operative Levels of Serum Albumin Predict Lymph Node Metastases and Ultimately Correlate with a Biochemical Recurrence of Prostate Cancer in Radical Prostatectomy Patients**

**Introduction and Objective:** Despite numerous studies analyzing the potent tumor-related factors that indicate biological aggressiveness in localized prostate cancer (PCa) treated by radical prostatectomy (RP), few studies have analyzed potent non-tumor-related factors, such as the host's general characteristics and immune activity. The aim of this study was to elucidate potent non-tumor-related biomarkers that indicate aggressiveness of PCa treated by RP.
**Materials and Methods:** Data from 179 patients who underwent various types of RP were analyzed. The factors that were analyzed, in addition to tumor-related factors, were age, body mass index, surgery type, amount of blood loss at surgery, complicating diseases expressed by the American Society of Anesthesiologists (ASA) risk classification system, and pre-operative serum albumin level. ASA risk classification system score and pre-operative serum albumin level in each patient are thought to be related to host immune activity comprehensively. The correlations between all the factors and biochemical recurrence (BCR) were analyzed. The correlations between pre-operative, intra-operative, and post-operative pathological factors were also analyzed.
**Results:** The mean follow-up duration was 25.2 months (1.2–94). Thirty-two cases (17.9%) had a BCR. The factors found to be significantly predictive of BCR using a Cox proportional hazard model were the pre-operative serum prostate specific antigen (PSA) level and the existence of pathological lymph node metastasis (LNM). A low pre-operative serum albumin level ($\leqq$ 4.0 g/dL) was significantly correlated with BCR in a univariate analysis. Logistic regression analyses revealed that a low pre-operative serum albumin level, an ASA score above class 2 and a Gleason score above 8 in the biopsy specimens were significantly predictive of pathological LNM.
**Conclusion:** Tumor-related characteristics are more important for predicting BCR. However, our results suggest that a low pre-operative serum albumin level may indicate extensive disease of clinically localized PCa and may ultimately be correlated with BCR. Multiple reasons, such as suppressed immune activity and changes in serum free testosterone levels caused by hypoalbuminemia, may be responsible for the progression of PCa.