Lateral Dominance of Positive Biopsy Cores Improves Prediction for Posterolateral Surgical Margin and Extracapsular Extension after Radical Prostatectomy

Introduction and Objective: We investigated whether lateral dominance of positive biopsy cores predicts posterolateral positive surgical margin (PL-PSM) and posterolateral extracapsular extension (PL-ECE) status in radical prostatectomy specimen.
Materials and Methods: A total of 3,034 patients underwent laterally directed 12-core prostate biopsy in our institution. Of them, 400 patients who underwent radical prostatectomy were included in this study. Patient age, prostate-specific antigen (PSA), PSA density, free-to-total PSA, clinical stage, prostate volume, trans-rectal ultrasound (TRUS) finding, were evaluated. From biopsy information, number of biopsy cores, number of positive cores, percentage of tumor and Gleason score were evaluated. Lateral dominance of positive cores was defined as number of positive cores in unilateral lobe of total number of positive cores.
Results: A total of 800 lobes were assessed in the analysis. PL-PSM in ipsilateral lobe presented in 153 lobes (25.9%) and ECE presented in 225 (38.1%). Univariate analysis showed that PSA, PSAD, abnormal TRUS finding, unilateral number of positive cores, total number of positive cores, percentage of tumor and positive core ratio were associated with PL-PSM and PL-ECE. Abnormal DRE and prostate volume were associated with PL-ECE but not with PL-PSM. Multivariate logistic regression analysis showed that PSA ($p=0.027$), abnormal TRUS findings ($p=0.004$), total number of positive cores ($p<0.001$), and lateral dominance of positive core ($p<0.001$) were independently associated with PL-PSM. On the other hand, another multivariate analysis showed that prostate volume ($p=0.051$), total number of positive cores ($p<0.001$), percentage of tumor ($p=0.036$) and lateral dominance of positive core ($p<0.001$) were independently associated with PL-ECE.
Conclusions: Lateral dominance of positive biopsy cores predicts PL-PSM and PL-ECE in prostatectomy specimen. Relative dominance of positive cores in one lobe suggests the higher risk of cancer remaining on ipsilateral surgical margin. Lateral dominance of positive biopsy cores can be used to improve preoperative predictability of PL-PSM and PL-ECE for surgical decision.