Analysis of Stage and Prognostic Grouping for Prostate Cancer in TNM Classification Seventh Edition: Results from the J-Cap Database

Introduction and Objectives: The TNM classification of Malignant Tumors (7^{th}-edition) introduced prognostic grouping for prostate cancer. We evaluated this grouping system using a Japanese prostate cancer database.
Materials and Methods: There were 15,259 patients who initially received primary androgen deprivation therapy (PADT) and for whom the Japan Study Group of Prostate Cancer (J-CaP) had detailed information on survival data, TNM stage, Gleason score (GS), and prostate-specific antigen (PSA). Overall survival (OS) five years after PADT was estimated by the Kaplan-Meier method according to prognostic grouping and subgroups stratified by TNM, GS, and PSA. A modified prognostic grouping was developed through these analyses. The concordance-index (c-index) in each grouping was calculated to evaluate the suitability.
Results: The 15,259 patients were stratified into Stage I (20.0%), II (27.8%), III (19.1%) and IV (33.1%) and into Group I (7.6%), II A (14.7%), II B (24.2%), III (19.1%) and IV (33.1%) by prognostic grouping (7^{th}-ed). Overall survival rates at five years were 88.7% (I), 86.3% (II), 80.6% (III) and 57.1% (IV) by stage grouping, and 90.1% (I), 88.4% (IIA), 85.6% (IIB), 80.6 % (III) and 57.1 % (IV) by prognostic grouping. Analysis of subgroups stratified by TNM, GS, and PSA revealed that the 5yOS of the group with T2c, PSA<10, and GS≦6, was 92%, the same as that of Group IIA. We subdivided group IV into IVA and IVB, with IVB being M1, PSA>100 or GS≧8, and the remainder being IVA. The 5yOSs of the modified prognostic groupings were 90.0% (I), 88.3% (IIA), 84.8% (IIB), 80.6 % (III), 72.9% (IVA), and 49.5% (IVB). The c-indexes of the modified prognostic groupings were 0.685 (OS), 0.827 (CSS) and 0.697 (PFS). The c-indexes of the stage and prognostic groupings were 0.668, 0.670 (OS), 0.798, 0.801 (CSS), 0.680, 0.683 (PFS). The c-indexes of the modified prognostic groupings were higher than those of the unmodified prognostic groupings (7^{th}-ed).
Conclusion: A modified grouping system incorporating PSA and GS was more strongly related with prognosis in prostate cancer patients than the unmodified 7^{th}-edition system. Our system might be useful for analysis of prostate cancer patients treated by PADT.