Comparison Between Intravesical and Oral Administration of 5-Aminolevulinic Acid in the Clinical Benefit of Photodynamic Diagnosis for Nonmuscle Invasive Bladder Cancer

Introduction and Objective: This study was undertaken to evaluate the clinical value of photodynamic diagnosis (PDD) with intravesical and oral instillation of 5-aminolevulinic acid (ALA) (ALA-PDD), and transurethral resection of bladder tumor (TURBT) guided by ALA-PDD (PDD-TURBT) for nonmuscle invasive bladder cancer.
Materials and Methods: Of all 210 cases, 75 underwent PDD with intravesically applied ALA, and 135 cases underwent PDD with orally applied ALA. Diagnostic accuracy was evaluated by comparing the level on images of ALA-induced fluorescence with the pathological result. PDD-TURBT was performed in 99 completely resectable cases corresponding to 210 ALA-PDD cases. To evaluate the abilities of PDD-TURBT, survival analysis regarding intravesical recurrence was retrospectively compared with the historical control cases that underwent conventional TURBT.
Results: The diagnostic accuracy and capability of ALAPDD were significantly superior to those of conventional endoscopic examination. Moreover, 72.1% of flat lesions, including dysplasia and carcinoma in situ, could be detected only by ALA-PDD. The recurrence-free survival rate in the cases that underwent PDD-TURBT was significantly higher than that of conventional TURBT. Moreover, multivariate analysis revealed that the only independent factor contributing to improving prognosis was PDD-TURBT (hazard ratio, 0.578; P, 0.012). Regardless of the ALA administration route, there was no significant difference in diagnostic accuracy, ability of PDD, or recurrence-free survival. All procedures were well tolerated by all patients without any severe adverse events.
Conclusions: This multicenter study is likely to be biased, because it is limited by the retrospective analysis. This study suggests that regardless of the ALA administration route, ALA-PDD and PDD-TURBT are remarkably helpful in detection and intraoperative navigation programs.