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LONG NON-CODING RNA MALAT1 RS619586 VARIANT AS A PROGNOSTIC BIOMARKER IN UROLOGICAL CANCER PATIENTS

Objective. Long non-coding RNAs are important regulators of carcinogenesis and promising prognostic biomarkers. MALAT1 (Metastasis-Associated Lung Adenocarcinoma Transcript 1) is involved in tumor progression, metastasis, and therapy resistance. Genetic variants of MALAT1 may affect cancer susceptibility and clinical outcomes; however, their prognostic significance in urological malignancies remains unclear. **Methods.** The study included 242 patients with urological malignancies: 101 with clear cell renal cell carcinoma (ccRCC) and 141 with urothelial carcinoma of the urinary bladder (UCB). Genomic DNA was isolated from peripheral blood, and the MALAT1 rs619586 polymorphism was genotyped using TaqMan Real-Time PCR (C₁₀₀-1060479_10). The study complied with the Declaration of Helsinki, and all participants provided written informed consent. Kaplan-Meier analysis was used to assess age at disease onset and overall survival. Differences between genotype groups were evaluated using the Log-rank and Gehan-Breslow-Wilcoxon tests, with hazard ratios (HRs), 95% confidence intervals (95% CIs), and statistical significance set at $p < 0.05$. **Results.** In the overall cohort, carriers of the minor G allele (AG+GG) tended to develop urological malignancies at a younger age than AA homozygotes (median age 62.5 vs. 68 years; HR = 1.44; $p = 0.069$). A significant association was observed in patients with urothelial carcinoma of the urinary bladder, where G-allele carriers developed the disease approximately 11 years earlier than AA homozygotes (65 vs 76 years; Log-rank $p = 0.032$; Breslow $p = 0.033$; HR = 1.796). Survival analysis revealed a significant association between rs619586 and overall survival in patients with clear cell renal cell carcinoma. Carriers of the minor G allele demonstrated significantly lower overall survival compared with AA homozygotes (Log-rank $p = 0.0101$). In contrast, no significant effect of rs619586 on overall survival was observed in patients with urothelial carcinoma of the urinary bladder ($p = 0.8479$). **Conclusions.** The rs619586 polymorphism of the MALAT1 gene is associated with earlier onset of urothelial carcinoma of the urinary bladder and poorer overall survival at clear cell renal cell carcinoma. These findings suggest that MALAT1 genetic variability may serve as a biomarker for risk assessment and prognostic stratification in urological malignancies. **Funding.** SRW "Determination of the role of molecular genetic predictors in early diagnosis and prognosis of malignant tumor diseases of the urinary system", No.0123U101850.

Keywords: MALAT1, rs619586, lncRNA, clear cell renal cell carcinoma, urothelial bladder carcinoma, overall survival, prognostic biomarker.

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