

## **Natural History of Initially-Diagnosed Low Grade, Ta Non-muscle Invasive Bladder Tumors**

**Introduction and Objective:** We evaluated the natural course of low grade Ta non-muscle invasive bladder cancer (NMIBC) using a longer follow-up.

**Materials and Methods:** We retrospectively reviewed 190 patients with low grade Ta NMIBC initially diagnosed between 1983 and 2008. These cases were re-reviewed by a dedicated uro-pathologist, especially focusing on the 2004 WHO grading system. Of them, BCG or MMC adjuvant intravesical instillation (IVI) was performed in 71 patients (37.4%) and 12 patients (6.3%), respectively. We defined worsening progression (WP) as confirmed high grade, pTis, all pT1, concomitant CIS of bladder recurrence, upper urinary tract (UTR) recurrence or progression to equal to or more than pT2. The associations between tumor recurrence and WP pattern, as well as clinicopathological factors were analyzed.

**Results:** Tumor recurrence occurred in 82 patients (43.2%) and WP occurred in 21 patients (11.1%) during follow-up (median follow-up: 101.5 months). Multivariate analysis demonstrated that tumor multiplicity and IVI were independent risk factors for tumor recurrence and tumor multiplicity was the only independent risk factor for WP. WP to high grade, pTis, all pT1, or concomitant CIS was seen in 17 patients (8.9%), and UTR and progression to equal to or more than pT2 were seen in 2 and 2 patients (1.1%), respectively. After 5-year tumor-free periods, 11 of 119 patients (9.2%) had recurred and 4 patients (3.4%) had worsening progressed.

**Conclusion:** Patients with multiple tumors had a high rate of tumor recurrence and the recurrence could be effectively prevented by adjuvant IVI compared to solitary tumors. Adjuvant IVI does not have an effect on the WP of low grade Ta tumors. We conclude that longer follow-up is required because of the occurrence of tumor recurrence and WP even after 5 years tumor-free periods.