

Bmi-1 is the Novel Prognostic Biomarker Associated With Epithelial Mesenchymal Transition in Upper Urinary Tract Urothelial Carcinoma

Introduction and Objective: Epithelial-Mesenchymal Transition (EMT) Associated Genes are potential regulators of cell adhesion and migration, therefore EMT is the important role in cancer invasion and metastasis. Recently, Bmi-1 is reported regarding the potential regulator of stem cell renewal and association with EMT. That molecule has also been reported as an oncogene by regulating p16 and p19. This study aimed to investigate the expression levels of E-cadherin, Snail, Twist and Bmi-1 in human upper urinary tract urothelial carcinoma (UUTUC) tissues and assessed to clarify whether these factors may be used as a novel biomarker to predict prognosis in UUTUC.

Materials and Methods: Between January 1995 and December 2010, a total of 80 patients underwent total nephroureterectomy were assessed. Median patient age was 71 years (range 48 to 98) and 57 males and 23 females. Median follow-up period was 35 months. Immunohistochemical analyses were performed to determine the expressions of E-cadherin, Snail, Twist and Bmi-1 with UUTUC.

Results: Expression of E-cadherin was reduced with increasing tumor grade ($p=0.0028$). Positive Snail expression predicted worse overall survival (OS) ($p=0.0075$). Twist was elevated with increasing lympho vascular invasion ($p=0.0324$), recurrence or metastasis ($p=0.0408$), respectively. Positive Bmi-1 expression predicted worse OS ($p=0.0118$) and worse progression free survival ($p=0.0045$). Cox proportional hazard test showed that Snail ($p=0.0137$) and Bmi-1 ($p=0.0204$) expression were the strong prognostic factors in UUTUC.

Conclusions: These results suggest that EMT associated genes, such as Snail, Twist and Bmi-1, may be useful prognostic markers in UUTUC. Especially, Bmi-1 is a novel prognostic biomarker in UUTUC.