Aim: Expression of the RNA-binding motif protein 3 (RBM3) has in previous studies been shown to correlate with favourable clinicopathological parameters and prognosis in a number of cancer forms. The aim of this study was to examine the expression and prognostic ability of RBM3 in patients with non-seminomatous germ cell tumours (NSGCT).

Methods: Immunohistochemical RBM3 expression was analysed in tissue microarrays with tumours from 206 patients with NSGCT. Chi-square test was applied to analyze associations between RBM3 expression and clinicopathological parameters. Kaplan-Meier analysis was used to assess the impact of RBM3 expression on cancer-specific survival (CSS) and progression-free survival (PFS). Cox regression proportional hazards models were used to estimate the relative risk for progression in both uni- and multivariable analysis.

Results: In the entire cohort, there was a significant association between clinical stage (p=0.044) and RBM3 expression. Low RBM3 expression correlated with a significantly reduced PFS [67.7% versus 87.8% (p=0.001)] and CSS [87.5% versus 97.3% (p=0.047)]. For patients with metastatic disease (n=88), significant associations were found between RBM3 expression and IGCCC prognostic index (p=0.007), combined tumor marker status (p=0.001) and HCG level (p=0.010). The PFS was significantly inferior for patients with low tumour-specific RBM3 expression [40.0% versus 73.0% (p=0.002)], and this association remained significant in a multivariable model (HR=2.98; 95% CI 1.14, 7.75).

Conclusions: Low RBM3 expression is significantly associated with a worse IGCCC-prognostic index and is an independent predictor of disease progression in metastatic NSGCT. These findings suggest that RBM3 may be a potential biomarker for treatment stratification in patients with metastatic non-seminomatous germ cell tumours, and therefore merit further validation.

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