論 文 要 旨

Expression of the Tumor Suppressive miRNA-23b/27b Cluster is a Good Prognostic Marker in Clear Cell Renal Cell Carcinoma

Tomoaki Ishihara

Purpose: We observed abnormal expression of the microRNA-23b/27b (miR-23b/27b) cluster in our previous study of miRNA expression signatures. However, the relationship between aberrant miRNA expression and clear cell renal cell carcinoma is not well established. We investigated the functional significance of the miR-23b/27b cluster in clear cell renal cell carcinoma cells and evaluated these miRNAs as biomarkers to predict the risk of clear cell renal cell carcinoma.
Materials and Methods: Expression levels of miR-23b and miR-27b were determined by quantitative real-time reverse transcriptase-polymerase chain reaction. The association between miRNA expression and overall survival was estimated by the Kaplan-Meier method. Gain of function assays were performed using mature miR-23b and miR-27b in the 786-O and A498 renal cell carcinoma cell lines. Targets regulated by these miRNAs were predicted by in silico analysis.
Results: Expression of the miR-23b/27b cluster was significantly decreased in clear cell renal cell carcinoma tissue specimens and associated with pathological grade and stage. Significantly shorter overall survival was observed in patients with lower expression of the miR-23b/27b cluster. Restoration of miR-23b and miR-27b significantly inhibited cancer cell proliferation, migration and invasion.
Conclusions: Expression of the miR-23b/27b cluster was frequently decreased in clear cell renal cell carcinoma tissue. Reduced expression of these miRNAs increased the risk of disease progression and predicted poor survival. Thus, miR-23b and miR-27b function as tumor suppressors, targeting several oncogenic genes in clear cell renal cell carcinoma cells.