Prognostic potential of circulating miR-93-5p in patients with colorectal liver metastases

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Abstract

Introduction: Approximately half of colorectal cancer (CRC) patients will develop liver metastases (CRLM) during the course of the disease. Even with the use of modern adjuvant systemic treatment, almost two thirds of metastatic colorectal cancer (mCRC) patients will eventually develop recurrent disease after curative-intent surgery, thus the new prognostic biomarkers are necessary. The expression signatures of microRNAs (miRNAs), a class of non-coding RNAs, have been associated with the diagnosis, prognosis, and therapeutic response in CRC. The expression pattern and prognostic potential of miR-93-5p has been studied previously in CRC but not in mCRC. The aim of this study was to examine the expression pattern and prognostic potential of tumoral and circulating miR-93-5p in patients with CRLM.

Material and method: The study included 35 mCRC patients treated by curative-intent liver resection and followed one year for early recurrence detection. The expression of miR-93-5p was analyzed by quantitative polymerase chain reaction and normalized using miR-16-5p in CRLM, surrounding non-tumor liver tissue and serum obtained from all patients. Receiver Operating Characteristic curve analysis and Youden's index were employed to estimate sample-based cut-off values for CRLM and serum miR-93-5p expression in order to stratify the patients into high- and low- miR-93-5p expression groups. High-/low-miR-93-5p expression in CRLM or serum was compared with demographic and clinicopathological data of study subjects, disease-free survival, and disease recurrence.

Results and discussion: Relative miR-93-5p expression was higher in CRLM in comparison to the non-metastatic liver tissue ($p<0.001$). High miR-93-5p serum levels were significantly associated with disease recurrence ($p=0.035$).

Conclusion: MiR-93-5p serum expression could be potentially used as a prognostic factor for early disease recurrence but not for recurrence-free survival. Further studies involving larger mCRC cohort are needed to confirm these findings.