Evaluation of the serum and tissue microRNAs expression in colorectal cancer

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Abstract

Introduction & Aim: MicroRNAs in colorectal cancer (CRC) have been provided a new insight into the cancer diagnosis. These RNAs have been suggested as reliable and stable biomarkers for various cancers. Our study aimed to analyze the microRNA expression in serum and tissue samples in CRC to examine the potential value of these molecules as diagnostic biomarkers.

Method: We studied the expression levels of seven microRNAs, including miR-20a, 21, 31,135b, 133b, 145 and let-7g in serum and tissue samples of CRC patients and matched adjacent healthy controls. The expression levels of these microRNAs were examined by the real-time PCR.

Results: We detected elevated levels of miR-21, miR-31, miR-20a and miR-135b and decreased levels of miR-145 and miR-let-7g in serum and matched tissue samples compared to normal ($p<0.05$). However, no significant differences were observed in the expression level of serum and tissue miR-133b between CRC patients and healthy controls ($P>0.05$). The expression level of miR-let-7g was found to be correlated in tissue and serum samples ($r = 0.421$, $p < 0.001$). ROC curve analysis showed that tissue miR-135b, miR-31 and miR-20a in cancer tissues could be useful biomarkers for discriminating CRC from healthy controls, with an area under the ROC curve (AUC) of 0.99 and $P<0.001$.

Conclusions: Our results indicated that the expression levels of microRNAs are systematically altered in CRC tissue and serum. In conclusion, the detection of miR-135b, miR-31 and miR-20a levels in the tissue might be served as biomarker in the diagnosis.

Keywords: Colorectal cancer, MicroRNA, Diagnosis