Veronika Vymetalkova et al., Arch Cancer Res 2018, Volume 6
DOI: 10.21767/2254-6081-C4-014

Circulating miRNAs: A cancer screening biomarkers in rectal cancer

Veronika Vymetalkova[1, 2], **Jana Slyskova**[1], **Klara Cervená**[1, 2], **Alena Opattova**[1, 2] and **Pavel Vodicka**[1, 2]
[1]Institute of Experimental Medicine-CAS, Czech Republic
[2]Charles University, Czech Republic

Circulating microRNAs (miRNAs) in the blood represent a new form of biomarkers for disease diagnosis and prognosis. Early detection of rectal cancer (RC) is the main prerequisite for successful treatment and reduction of mortality. In this study, we aimed to evaluate the levels of circulating miRNAs that might serve as markers for RC diagnosis, prognosis and survival. First, miRNA array screening (2,555 miRNA investigated) in 102 paired RC samples (tumor and non-malignant mucosa) was used to select candidate markers. 11 miRNAs expression levels were associated with recurrence free survival after adjuvant therapy. These candidate miRNAs associated with patient's survival and treatment response were profiled in plasma samples from 100 subjects with RC collected at 2-time intervals and compared to 40 healthy controls. The first sampling was collected at the time of diagnosis, (i.e., active disease) the second sampling was conducted around one year after the diagnosis. Higher expression levels of miRNA-18a/b and miRNA-19a/b was identified to be associated with a shorter overall survival in RC patients. The second aim of this study was to compare next generation sequencing (NGS) technologies that have been optimized specifically miRNAs, with qRT-PCR-based methods for profiling miRNAs in biofluids. Plasma miRNA expression were thus additionally characterized by next generation sequencing in 24 patients over time and validated in 100 subjects with RC collected at 2-time intervals. Higher expression levels of miRNA-122 were identified to be associated with a shorter overall survival in RC patients. We believe that our results provide evidence that circulating miRNAs might be a next-generation biomarker and contribute to cancer screening in non-invasive liquid biopsy.

Biography

Veronika Vymetalkova is a young Postdoctoral Fellow with 50 publications, nine as first author, one book as a main author and one book chapter as a co-author. Her H-index is 15 and her work has been cited 716 times (source: WOS). She has already been Principal Investigator (PI) in two finished grants, one during her PhD and one as a Postdoctoral Fellow. She is also PI in two running grants. Her main research interest is role of genetic variations, microRNAs and circulating biomarkers in colorectal cancer.

veronika.vymetalkova@iem.cas.cz

Notes: