

Predictive, Preventive and Personalized Medicine & Molecular Diagnostics

September 01-03, 2015 Valencia, Spain

Does quantification of hypoxia mediated miRNAs in the circulation of patients with high grade gliomas reflect the anti-angiogenic effect of bevacizumab?

Iris Lavon, Charbit H, Siegal T, Paldor I, Zelikovitch B, Canello T, Mordechai A, Shoshan Y, Benis A, Morokoff A, Drummond K and Kaye A
Hadassah Hebrew University Medical Center, Israel

Identification of tumor-specific circulating miRNAs may offer biomarkers to evaluate prognosis and response to therapy in patients with the incurable tumor Glioblastoma (GBM). The salvage therapy for recurrent GBM who have failed the standard-of-care of radiation and temozolomide chemotherapy, is bevacizumab, a recombinant human monoclonal anti-VEGF antibody. We previously demonstrated that among others, four of the hypoxia-mediated-miRNAs (miR-210, miR-21, miR-10b and miR-196b), are up-regulated in gliomas as compared to normal brain. We hypothesized that the expression of these miRNAs will be altered in response to hypoxia following treatment with anti-angiogenic drug and might serve as circulating biomarkers to the drug efficiency. Thus we aimed to develop a strategy for a rapid, sensitive and noninvasive technique for monitoring anti-angiogenic therapy dynamics by analysis of circulating tumor-specific microRNAs. For that purpose the expression these miRNAs were evaluated by real-time-RT-PCR from circulating RNA that was collected longitudinally from 15 patients with GBM treated with bevacizumab. Radiographic evaluation was based on measurable changes in tumor dimensions using MRI by fluid-attenuated inversion recovery (FLAIR) and contrast enhanced T1-weighted images. The quantification of miR-10b and miR-21 were significantly negatively correlated to MRI measurements, especially to sum product contrast diameter ($R=0.51/p=0.002$; $R=0.568/p<0.0001$ respectively). There was even higher correlation between the quantification of both miRNA and the contrast measurements than the correlation of each of them separately ($R=-0.648/p<0.0001$). This non-invasive procedure may lead to the routine use of circulating micro-RNA as a strategy for a rapid, sensitive and noninvasive technique for monitoring anti-angiogenic therapy dynamics.

Biography

Iris Lavon is the Head of the Molecular Neuro-Oncology Laboratory in the Departments of Neurology and Oncology at the Hadassah-Hebrew University Medical Center. She completed her PhD in 1999. The main research interests of her lab are in the field of molecular characteristics of brain tumors and personalized medicine for patients with brain tumors and neurodegenerative diseases. The results of her studies have been published in 28 scientific papers. Several of her findings have been patented and were shown to have clinical applications in terms of potential implementation in the development of new therapeutic approaches.

Irisl@hadassah.org.il

Notes: