Non-Small cell lung cancer leptomeningeal metastases

Non-small-cell lung cancer (NSCLC) has a terrible consequence called leptomeningeal metastases (LM). It is crucial to look for novel biomarkers because none of the known biomarkers could effectively reflect the oncogenesis, progression, and therapeutic responses of LM. Exosomal miRNAs from plasma have a critical function in lung cancer, according to growing data. However, unique biomarkers of cerebrospinal fluid (CSF) are more representative of patients with LM, which have not been reported. Li et al. explored the possibility of using CSF-derived exosomal microRNAs as potential biomarkers for NSCLC-LM. Nine NSCLC-LM patients who received regular intrathecal chemotherapy with pemetrexed were divided into a partial response (PR) group and a progressive disease (PD) group. CSF samples were taken from all patients before and after intrathecal treatment and five non-cancerous controls. Using the size exclusion chromatography (SEC) method, the exosome microRNAs were isolated and profiled. Between LM patients and controls, 56 differentially expressed genes (DEGs) were found, of which three highly elevated diagnostic biomarkers (hsa-miR-183-5p, hsa-miR-96-5p and hsa-miR-182-5p) were ruled out. The two most significant DEGs between the untreated PR group and the PD group were determined to be upregulated hsa-miR-509-3p and downregulated hsa-miR-449a, and they may serve as potential indicators of intrathecal anti-pemetrexed treatment. Hsa-miR-1-3p increased gradually with intrathecal chemotherapy in the PR group, which might offer a new approach to screening optimal patients and estimating efficacy. This study revealed specific CSF exosomal miRNAs profile and dynamic changes in patients with NSCLC-LM for the first time and identified several potential exosomal miRNA biomarkers in diagnosis, drug resistance, and prognosis [1)].

1)

Li H, Xia M, Zheng S, Lin Y, Yu T, Xie Y, Shen Y, Liu X, Qian X, Yin Z. Cerebrospinal fluid exosomal microRNAs as biomarkers for diagnosing or monitoring the progression of non-small cell lung cancer with leptomeningeal metastases. Biotechnol Genet Eng Rev. 2023 Feb 28:1-22. doi: 10.1080/02648725.2023.2183613. Epub ahead of print. PMID: 36852928.