

MicroRNA and aneurysm

miR 16, miR 143, and miR 200 showed statically significant higher expression among cases with cerebral aneurysms in comparison to controls. Thus, these preliminary results of miRNAs biomarkers are promising future tool to be used for aneurysmal screening ¹⁾

The molecular mechanisms behind intracranial aneurysm formation and rupture remain poorly understood.

The MicroRNA and mRNA interactions and expression levels in cerebral aneurysm tissue from human subjects were profiled.

A prospective case-control study was performed on human subjects to characterize the differential expression of mRNA and miRNA in unruptured cerebral aneurysms in comparison with control tissue (healthy superficial temporal arteries [STA]). Ion Torrent was used for deep RNA sequencing. Affymetrix miRNA microarrays were used to analyze miRNA expression, whereas NanoString nCounter technology was used for validation of the identified targets.

Overall, 7 unruptured intracranial aneurysm and 10 STA specimens were collected. Several differentially expressed genes were identified in aneurysm tissue, with MMP-13 (fold change 7.21) and various collagen genes (COL1A1, COL5A1, COL5A2) being among the most upregulated. In addition, multiple miRNAs were significantly differentially expressed, with miR 21 (fold change 16.97) being the most upregulated, and miR 143-5p (fold change -11.14) being the most downregulated. From these, miR-21, miR-143, and miR 145 had several significantly anticorrelated target genes in the cohort that are associated with smooth muscle cell function, extracellular matrix remodeling, inflammation signaling, and lipid accumulation. All these processes are crucial to the pathophysiology of cerebral aneurysms.

This analysis identified differentially expressed genes and miRNAs in unruptured human cerebral aneurysms, suggesting the possibility of a role for miRNAs in aneurysm formation. Further investigation for their importance as therapeutic targets is needed ²⁾.

¹⁾

Al-Jehani HM, Turkistani AN, Alrayes MM, AlHamid MA, AlShamikh AS, Al Sadah ZM, Alabbas FM, Cyrus C, Al-Ali AK. The role of MicroRNA as a potential diagnostic and prognostic biomarker for cerebral aneurysms. *Neurosciences (Riyadh)*. 2023 Oct;28(4):250-257. doi: 10.17712/nsj.2023.4.20230028. PMID: 37844954.

²⁾

Bekelis K, Kerley-Hamilton JS, Teegarden A, Tomlinson CR, Kuintzle R, Simmons N, Singer RJ, Roberts DW, Kellis M, Hendrix DA. MicroRNA and gene expression changes in unruptured human cerebral aneurysms. *J Neurosurg*. 2016 Dec;125(6):1390-1399. PubMed PMID: 26918470; PubMed Central PMCID: PMC5001931.

From:

<https://neurosurgerywiki.com/wiki/> - Neurosurgery Wiki

Permanent link:

https://neurosurgerywiki.com/wiki/doku.php?id=mir_143

Last update: 2024/06/07 02:56



