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MicroRNAs as fluid biomarkers of frontotemporal dementia: a systematic review

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State of the art: MicroRNAs (miRNAs) are small, non-coding units of RNA that remain stable in circulating fluids. This stability, coupled with the cost-effectiveness and minimal invasiveness of biofluid collection, creates promise for miRNAs as biomarkers. Use of miRNAs as biomarkers has been investigated in several neurodegenerative disorders, with many promising markers emerging for Alzheimer's disease. The purpose of this systematic review was to investigate studies of circulating miRNAs as biomarkers of FTD.
Methodology: A systematic review was undertaken to identify all peer-reviewed publications published in English from January 2008 to April 2022. We included all publications that quantified circulating miRNAs in FTD patient cohorts and a control group. Publications were identified through a literature search in Ovid Medline; furthermore, all reference lists of included studies were searched by hand.
Results: Of 127 unique studies identified, 12 met our inclusion criteria and were included in the systematic review. This review summarises their cohorts, study design, methodology, and findings. Identified studies investigated miRNAs as FTD biomarkers in blood cells, plasma, serum, or cerebrospinal fluid. They implemented both discovery and candidate methods to evaluate miRNA levels in genetic and/or sporadic FTD. More than 200 miRNAs were reported to be differentially expressed in FTD; however, there was limited overlap of dysregulated miRNAs across studies.
Conclusion: Circulating miRNAs show potential as biomarkers for FTD and further studies are warranted to validate current findings.

Conflicts of interest

The authors declare no conflict of interest.