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Prognostic Significance of microRNA-532 -3p and microRNA-582-5p Gene Expression in A cohort of Egyptian AML Patients

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By

Enas Ali Saeed Saeed

M.B.B.CH

MSc of Clinical and Chemical Pathology

Faculty of Medicine, Fayoum University

Under supervision of

Prof. Dr. Mervat Mamdooh Ahmed Khorshied
Professor of Clinical and Chemical Pathology

Faculty of Medicine – Cairo University

Prof. Dr. Aml Soliman Nasr
Professor of Clinical and Chemical Pathology

Faculty of Medicine – Cairo University

Prof. Dr. Amira Diyaa Darwish
Professor of Medical Oncology

National Cancer Institute - Cairo University

Prof. Dr. Salwa Bakr Mohamed
Professor of Clinical and Chemical Pathology

Faculty of Medicine, Fayoum University.

Faculty of Medicine, Cairo University

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ABSTRACT

Introduction: Acute myeloid leukemia (AML) is an aggressive clonal hematopoietic neoplasm with high mortality rates. Ectopic expression of microRNA (miR) contributes to cancer pathogenesis, progression, and response to therapy.

Aim: To study prognostic significance of miR-532 -3p, and miR-582-5p gene expression in a cohort of Egyptian AML patients, and clarify their possible role as non-invasive molecular biomarkers.

Patients and Methods: Plasma levels of miR-532-3p, and miR-582-5p gene expression of 71 newly diagnosed AML patients recruited from the National Cancer Institute (NCI) and twenty age and gender-matched healthy controls were evaluated using real-time PCR.

Results: Plasma level of miR-532 -3p gene expression was lower in AML patients in comparison with controls with a statistically significant difference (P-value <0.001). MiR-582-5p gene expression level was lower in AML patients than controls yet the difference was statistically insignificant (P-value = 0.45). There was a statistically significant difference between the high and low levels of miR-532 -3p gene expression regarding gender and Platelets count (P-value 0.03, and 0.04, respectively). Meanwhile, no statistically significant difference was encountered between high and low expression levels of miR-532-3p gene or miR-582-5p as regards age, clinical characteristics, laboratory data including immunophenotyping, molecular, and cytogenetic findings, and ELN (2022) stratification risk (P-value >

0.05). However, there was a statistically significant positive correlation between miR-582-5p and disease-free survival with a p-value of 0.04. Additionally, there was a highly statistically significant positive correlation between miR- 532-3p, and miR -582-5p (p-value 0.001) in which the increase in miR -582-5p will be associated with the increase in both miR-532-3p and disease-free survival. However, there was no statistically significant association between mir -582-5p, and mir- 532-3p gene expression and overall survival (P-value > 0.05).

Conclusion: Plasma miRNA-582-5p and miRNA 532-3p can be used as a novel disease-free survival predictor for acute myeloid leukemia. Lower levels of miR-532 -3p and miRNA-582-5p gene expression in AML patients in comparison to healthy controls, suggesting their antioncogenic role.

Keywords: AML, miR-532-3p, miR-582-5p, antioncogene, biomarker,