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Altered Expression of Long non-coding RNAs in Acute Myeloid Leukemia

Arefeh Mazhari1

Department of Hematology and Blood Bank, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran.1

E-mail: arefehmz1376@gmail.com

Background

Acute myeloid leukemia (AML) is an invasive and heterogeneous disease of the hematopoietic system characterized by the high proliferation of myeloid leukemia cells in the bone marrow and maturation arrest in hematopoiesis.

The most human genome is transcribed as non-coding RNAs (ncRNAs), and protein-coding RNAs are only <2%. Long non-coding RNAs (LncRNAs) are non-coding RNAs with transcripts greater than 200 nucleotides that have an important role in epigenetics, transcription, alternative splicing, and other biological processes. (1)

Recent studies have shown that some of the lncRNAs take part in pathogenesis, clinical outcome, and prognosis of AML. They are also known as biomarkers for the diagnosis of AML. Some of them act as oncogenes, and some act as tumor-suppressors.

Materials and Methods

In this review, we summarized current studies regarding the expression and prognostic effects of lncRNAs in acute myeloid leukemia.

References

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2. Gao J, Wang F, Wu P, Chen Y, Jia Y. Aberrant LncRNA expression in leukemia. Journal of Cancer. 2020;11(14):4284.

Results and conclusion

H19, Colorectal Neoplasia Differentially Expressed (CRNDE), Plasmocytoma Variant Translocation 1 (PVT-1), Taurine Up-Regulated 1 (TUG1), LncRNA associated with microvascular invasion in HCC (lncRNA MVIH), Urothelial Cancer-Associated 1 (UCA1), HOX Transcript Antisense RNA (HOTAIR), Promoter Of CDKN1A Antisense DNA Damage Activated RNA (PANDAR), RUNX1 Overlapping RNA (RUNXOR), HOXA Cluster Antisense RNA2 (HOXA-AS2), Colon Cancer Associated Transcript 1 (CCAT1), Metastasis Associated Lung Adenocarcinoma Transcript 1 (MALAT1) are the examples of lncRNAs that up-regulated in AML and Nuclear Enriched Abundant Transcript 1 (NEAT1), IGFIR Antisense Imprinted None-Protein Coding RNA (IRAIN), Maternally Expression Gene 3 (MEG3), Growth Arrest Specific 5 (GAS5), Cancer Susceptibility 15 (CASC15) down-regulated in AML. Most of these lncRNAs were associated with poor prognosis of AML. (2)