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Letter to Editor Open Access

New Insights into Diagnosis of Monoclonal Gammopathy of Undetermined Significance: Emerging Role of Micro RNAs

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Dear editor,

Despite the recent advances in the understanding of pathogenic mechanisms and the introduction of new therapeutic regimens, Monoclonal Gammopathy of Undetermined Significance (MGUS) continues to be a diagnostic and therapeutic challenge for both clinicians and laboratory practitioners.

Recent studies have shown that (MGUS) is a premalignant stage, which can progress to Multiple Myeloma (MM) or related plasma cell disorders. MGUS is present in over 3% of the population above the age of 50, and progresses to myeloma or related malignancy a rate of 1% per year [1].

MicroRNAs (miRs) are short sequences (22-25 nucleotides) of non-coding RNA molecules that regulate a range of biological processes by inducing RNA degradation and/or translation inhibition of targeted mRNAs [2]. miR alterations have been observed in various types of hematological malignancies, including MGUS and MM.

As posttranscriptional regulators of gene expression, miRNAs can act both as oncogenes and tumor suppressor genes demonstrating an important role in the pathogenesis and prognosis of hematological malignancies. The importance of miRNA dysregulation in the pathogenesis of MGUS is implied by the fact that miRNAs play pivotal roles in lineage differentiation and hematopoiesis regulation [3].

Recently, several studies have investigated the efficacy of miRs as diagnostic or prognostic biomarkers in MGUS and MM malignancies, found several deregulated miRNAs (i.e., miR-21, miR-744, let-7e, miR-130a and miR-34a) compared to healthy donors and implicated miRNAs in signaling pathways deregulated in MGUS pathogenesis [4,5].

More recently, Kubiczkova et al. have found that association of miR-34a and let-7e can distinguish MGUS patients from healthy donors with sensitivity of 91.1% and specificity of 96.7% [6].

The use of miRNAs as biomarkers has greatly increased as a result of the discovery that they are present in the circulating blood. A number of groups have shown that miRNAs can be detected in human serum or plasma, where they are thought to be protected from degradation by being encapsulated in microvesicles or exosomes and/or are bound by RNA-binding proteins such as Ago2 and nucleophosmin [7].

In addition to their potential use as diagnosis biomarker, miRs may represent a useful tool in predicting the clinical outcome of a disease or even identifying subgroups of patients at high risk, to develop early intervention strategies [8].

The miRNA field continues to grow at a phenomenal rate and new roles for miRNAs in biological and disease processes are constantly being discovered. However, more studies are needed to reveal the full potential of these small molecules.

References

1. Korde N, Kristinsson SY, Landgren O (2011) Monoclonal gammopathy of undetermined significance (MGUS) and smoldering multiple myeloma (SMM): novel biological insights and development of early treatment strategies. Blood 117: 5573-5581.
2. Esquela-Kerscher A, Slack FJ (2006) Oncomirs - microRNAs with a role in cancer. Nat Rev Cancer 6: 259-269.
3. Lawrie CH (2013) MicroRNAs in hematological malignancies. Blood Rev 27: 143-154.
4. Jones CI, Zabolotskaya MV, King AJ, Stewart HJ, Horne GA, et al. (2012) Identification of circulating microRNAs as diagnostic biomarkers for use in multiple myeloma. Br J Cancer 107: 1987-1996.
5. Korde N, Kristinsson SY, Landgren O (2011) Monoclonal gammopathy of undetermined significance (MGUS) and smoldering multiple myeloma (SMM): novel biological insights and development of early treatment strategies. Blood 117: 5573-5581.
6. Kubiczkova L, Kryukov F, Slaby O, Dementyeva E, Jarkovsky J, et al. (2013) Circulating serum microRNAs as novel diagnostic and prognostic biomarkers for multiple myeloma andmonoclonal gammopathy of undetermined significance. Haematologica.
7. Gilad S, Meiri E, Yogev Y, Benjamin S, Lebanony D, et al. (2008) Serum microRNAs are promising novel biomarkers. PLoS One 3: e3148.
8. Calvo KR, Landgren O, Roccaro AM, Ghobrial IM (2011) Role of microRNAs from monoclonal gammopathy of undetermined significance to multiple myeloma. Semin Hematol 48: 39-45.

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