MedicalXpress

New treatment target identified for aggressive lymphomas

March 1 2017

Scientists at the Centro Nacional de Investigaciones Cardiovasculares Carlos III (CNIC) have identified a possible therapeutic target for two types of very aggressive lymphomas. The CNIC team discovered that the microRNA miR-28 regulates the terminal differentiation of B lymphocytes, blocking the growth of B cell lymphomas. The study, published in *Blood*, establishes the therapeutic potential of synthetic miR-28 analogs for inhibiting the growth of Birkitt lymphoma and diffuse large cell lymphoma. These findings could lead to the development of the first miRNA analog therapy for the treatment of B cell lymphoma and provide the basis for human trials.

Most diagnosed lymphomas originate in mature B lymphocytes. An estimated 400 000 people are diagnosed with lymphoma every year, and more than 200,000 people die each year as a consequence of this type of blood cancer. Around 60 percent of patients have very aggressive forms of the disease, such as Burkitt lymphoma or diffuse large cell lymphoma, and these patients often do not respond to chemotherapy, or their disease relapses after treatment. Because of this, research coordinator Dr. Almudena Ramiro stresses that "we need to find alternative therapies to replace or complement those that are already available."

MiroRNAs (miRNAs) are small RNA molecules that regulate gene expression, influencing diverse biological and disease processes. The molecular characteristics and biological versatility of miRNAs has attracted intense interest in their potential in the treatment of cancer.

miR-28 functions

In the *Blood* article, the CNIC research team characterizes the function of miR-28 in the biology of mature B lymphocytes and in the development of lymphomas associated with this cell type. The results of the study demonstrate that miR-28 regulates the terminal differentiation of B lymphocytes, a fundamental process in the biology of these cells that generates memory B lymphocytes and highly specific plasma cells. Dr. Ramiro said, "The presence of miR-28 reduces the proliferative capacity and survival of mature B lymphocytes." The research team discovered that miR-28 is often lost in lymphomas, and that re-establishing its expression slows tumor growth.

The study authors conclude by emphasizing the importance of identifying drugs that can improve the efficacy and reduce the toxicity of current standard lymphoma treatments. The results of this study reveal the therapeutic potential of miR-28 and provide ample justification for the initiation of clinical trials of miR-28-based therapies to treat B cell lymphomas.

More information: Nahikari Bartolomé-Izquierdo et al, miR-28 regulates the germinal center reaction and blocks tumor growth in preclinical models of non-Hodgkin lymphoma, *Blood* (2017). DOI: 10.1182/blood-2016-08-731166

Provided by Centro Nacional de Investigaciones Cardiovasculares