IL-1ß conditions Leukemia and Lymphoma Cell Proliferation.

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Hematological Malignancies have recently become curable for 30-60% of patients. However, because the causes are still not known, it is possible to cure the symptoms with the conventional chemotherapy and eliminate the tumor cells via the ionizing radiation and/or bone marrow transplantation, but the remission rate is still very low over the time. The main goal of this study was to understand the role of inflammatory patterns in leukemia and lymphoma cells. To this purpose Peripheral and Bone-marrow-derived blood was collected and peripheral blood mononuclear cells (PBMCs) were isolated by means of Ficoll's gradient. The stimulation of PBMCs with IL-1ß significantly increased the levels of IL-17A in PBMCs obtained from non-Hodgkin lymphoma (NHL) and chronic lymphocytic leukemia (CLL) patients compared to the healthy patients. In order to understand the earlier steps following the production of the endogenous IL-1ß, PBMCs were treated with LPS, a TLR4 ligand, that is well known to induce the activation of the inflammasome in the presence of ATP. The activation of the inflammasome (LPS+ATP) induced high release of IL-1ß from NHL- and CLL-derived PBMCs. Similarly, IFNa was highly produced after the activation of the inflammasome in both NHL- and CLL-derived PBMCs. Moreover, the stimulation with IL-1ß increased tumour cell proliferation in both NHL and CLL samples. In contrast the administration of IL-1Ra, antagonist of IL-1ß, significantly reduced IL-1ß-mediated proliferation of PBMCs from NHL and CLL patients.
These data support our hypothesis on the role of the inflammasome and more specifically of IL-1ß on hematopoietic tumor progression.