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Monoclonal B-Cell Lymphocytosis: Compromise of the Immune System?

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ABSTRACT

Abbreviations: MBL: Monoclonal B-cell Lymphocytosis; CLL: Chronic Lymphocytic Leukemia; SLL: Small Lymphocytic Lymphoma; COVID-19: Coronavirus Disease 2019; SARS-CoV-2: Severe Acute Respiratory Syndrome Coronavirus 2; RZV: Recombinant Zoster Vaccine

Introduction

Monoclonal B-Cell Lymphocytosis (MBL) is part of the mature B-cell neoplasms despite actually being a pre-neoplastic condition [1], this entity, largely unstudied, affects more than 5-10% of older adults age 40 and the incidence increases with aging [2,3], MBL is widely associated as one of the main risk factors for developing Chronic Lymphocytic Leukemia (CLL)/Small Cell Lymphocytic Lymphoma (SLL), since studies Prospective cohort studies verified, in effect, that CLL is always preceded by MBL, therefore, the greater the number of clonal B cells, the greater the risk of developing this type of cancer [4]. However, it is not ruled out that MBL is implicated in the lymphomagenesis of other pathologies such as follicular lymphoma and mantle cell lymphoma [5]. It is now known that low-count MBL is associated with immunological impairment with an increase in serious infectious complications, suggesting that some of the immune deficits seen in high-count MBL and CLL are also present in low-count MBL. recount, albeit to a lesser degree [6,7].

Differences have been observed in some blood cell populations in individuals with low-count MBL in contrast to individuals without MBL, which could contribute to immune dysregulation, among others, and in general, the median absolute number of leukocytes is usually higher in people with MBL, mainly by CD4+, CD8+, and double-negative T cells; in contrast, lower values for B lymphocytes are typically observed in individuals with low-count MBL compared with individuals without MBL [7,8]. Taken together, these observations suggest that people with MBL have detectable, but more limited immune defects than those with CLL. This higher risk in people with low-count MBL appears to be primarily related to a higher frequency of pneumonia and bloodstream infections/sepsis. The current findings suggest that the risk of serious infections is more important for people with MBL than their risk of progression to CLL or another lymphoproliferative disorder [6].

In the recent pandemic situation caused by the coronavirus disease 2019 (COVID-19), the possibility of an increased risk of hospitalization or of contracting this entity in people with MBL was studied, finding that even though there is no increased risk Of contracting SARS-CoV-2 infection in people with MBL, they do have a higher risk of hospitalization due to COVID-19, suggesting that the presence of immune dysregulation would increase the risk of adverse outcomes [2]. On the other hand, the immunogenicity generated by vaccines such as influenza in individuals with MBL has begun to be

evaluated; a recent study using the 2013-2014 and 2014-2015 high-dose trivalent influenza vaccine (HD IIV; Fluzone® High-Dose; Sanofi Pasteur), reveals that this is lower than that reported in healthy adults [9]. Something similar was observed when testing for seroconversion in people with MBL vaccinated for COVID-19, where after the first dose was applied, 50% of the individuals remained seronegative and 9.5% remained so after the second. Dose [10].

Similarly, the immunogenicity of recombinant zoster vaccine (RZV) was studied in patients with CLL and MBL, for both cases, only 29% of the participants achieved combined antibody and cellular responses to RZV, all this raises the question. need to apply different strategies to improve the response to vaccines in these individuals [11]. Due to all of the above, the need to continue conducting follow-up studies in individuals with MBL to assess the changes in the different cell subpopulations of peripheral blood and bone marrow, as well as possible changes in the humoral immune response and the presence of polymorphisms, arises. of a single nucleotide that confers greater immune compromise. Additionally, new immunization protocols should be evaluated that are more effective and reduce the risk of hospitalization and/or death in individuals with this condition.

Acknowledgment

None.

Conflict of Interest

All authors declare no conflict of interest.

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