PB2031 CD269, CD319 EXPRESSION ON MALIGNANT PLASMA CELLS AND SOLUBLE BCMA, SLAMF7 PROTEINS COMPARATION IN NEWLY DIAGNOSED MULTIPLE MYELOMA PATIENTS

Topic: 14. Myeloma and other monoclonal gammopathies - Clinical

Anton Startsev1, Maxim Solovev1, Valentina Dvimyk1, Maria Panasenko1, Irina Galtseva1, Nikolay Kapranov1, Maiia Firsova1, Eleonora Makunina1, Alexandra Abakumova1, Elizaveta Mamaeva1, Larisa Mendeleeva1

1 National Medical Research Center for Hematology, Moscow, Russian Federation (Russia), Moscow, Russian Federation

Background:

Malignant plasma cells (PC) immunophenotype is well understood and represented by a large group of antigens expressed with varying frequency. Clusters of differentiation are both diagnostic and prognostic factors. Some of these serve as targets for monoclonal antibody and genetically engineered T-cells with chimeric antigen receptors in multiple myeloma (MM) patients. These molecules are SLAMF7 (Signaling lymphocytic activation molecule factor - CD319) and BCMA (B-cell maturation antigen - CD269). Membrane subunits of these molecules can be cleaved by enzymes (e.g. γ-secretase) and released to the plasma as soluble proteins and can be easily detected using readily available commercial enzyme-linked immunosorbent assays (ELISA). SLAM family of receptors is a self-regulating and stimulates tumor proliferation. Therefore, soluble BCMA detection is one of the predictors of refractory disease.

Aims:

To compare the CD269, CD319 expression on malignant PCs and sBCMA, sSLAMF7 protein concentrations in serum of newly diagnosed multiple myeloma patients.

Methods:

The prospective study included 18 patients (8 women, 10 men) aged 26 to 70 years (median 54) with NDMM between June and September 2021. They received VRD induction therapy (2-4 cycles, median 4). Malignant PCs immunophenotyping was determined by multicolor flow cytometry (MFC) (CD319; CD269; CD138; CD38; CD19; CD45; CD81; CD27; CD20; CD56; CD200; CD117). Concentration of soluble BCMA, SLAMF7 in serum was detected using commercial ELISA (RayBio® Human CRACC/SLAM7 ELISA Kit, RayBio® Human TNFRSF17 ELISA Kit). Statistical analyses were performed using SPSS.

Results:

The results of the CD269, CD319 and sSLAMF7, sBCMA protein concentrations in the serum of NDMM patients are presents in Table 1.

According to MFC of bone marrow malignant PCs, the presence of CD319 is detected in 90% of patients (n=16). sSLAMF7 protein is detected in the serum of 39% of patients (n=7) in the range of 1.14 to 5.43 ng/ml (median 2.9), in 61% of cases (n=11) sSLAMF7 wasn’t detected. In 56% of cases sSLAMF7 wasn’t detected, but CD319 was detected on the surface of malignant PCs. No cases of sSLAMF7 without the presence of CD319 on the malignant PC were detected in this study.

CD269 was detected on malignant PCs in 45% of patients (n=8) and in 55% of cases (n=10) malignant PCs was CD269 negative. sBCMA was detected in 100% of patients (n=18). The concentration ranged from 122.33 to 11617.32 pg/ml (median 2139.7). In the group of CD269 positive patients, sBCMA concentration was significantly (p=0.001) higher than in CD269 negative group: medians were 5334.12pg/ml (1933.6-11617.3) vs 318.87pg/ml (122.3-3962.2), respectively.
After induction therapy response was complete response in 16.5% (n=3), very good partial response in 12% (n=2), partial response in 66% (n=12), and progression disease in 5.5% (n=1). However, statistically significant correlations were not found between the depth of response, the presence of CD319, CD269 on the malignant PCs or/and the concentration of sSLAMF7, and sBCMA.

Image:

| Clusters of differentiation detection frequency on malignant plasma cells | Soluble proteins detection frequency | Soluble proteins concentration, median (range) |
|-------------------------------------------------------------------------|-----------------------------------|---------------------------------------------|
| CD319                                                                   | 90%                               | ≥5 ng/ml (1.1 - 5.4)                         |
| CD269                                                                   | 45%                               | ≥5 ng/ml (1.1 - 5.4)                         |
| SLAMF7                                                                  | 35%                               | ≥5 ng/ml (1.1 - 5.4)                         |
| BCMA                                                                    | 100%                              | ≥5 ng/ml (1.1 - 5.4)                         |
| sSLAMF7                                                                 | 61%                               | ≥5 ng/ml (1.1 - 5.4)                         |
| sBCMA                                                                   | 100%                              | ≥5 ng/ml (1.1 - 5.4)                         |

Summary/Conclusion: The high frequency of CD319-positive patients was not accompanied by detection of sSLAMF7 in 61% of patients. Whereas, 100% sBCMA detection in NDMM patients was not followed by CD269 detection on malignant PC in half of the patients. These findings may indicate both the heterogeneity of MM and the necessity for further studies of sBCMA and sSLAMF7 to determine their prognostic significance.