IMMUNOPHENOTYPE AND BIOLOGICAL FEATURE OF CD20 POSITIVE IGM NEGATIVE PLASMA CELL NEOPLASMS: A SINGLE CENTER STUDY.

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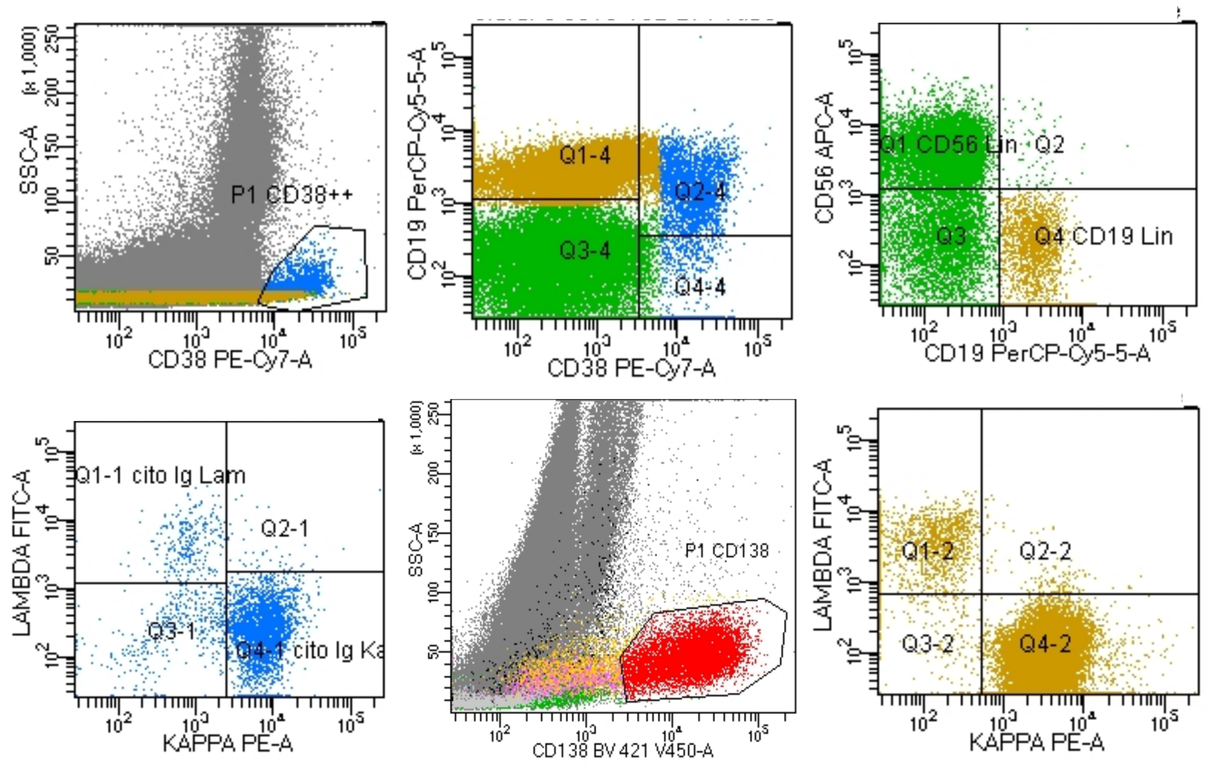
Background

The biological significance of CD20 expression on clonal plasma cells (PC) is still uncertain and, except for Waldenstrom Macroglobulinaemia, it is observed in a minority of PC disorders. We have retrospectively analyzed **425** consecutive patients diagnosed in our center to evaluate the immunophenotypic and biological characteristics of CD20+ IgM negative PC neoplasms, defined by >20% CD20+ clonal PC evaluated on the total number of CD38/CD138 positive bone marrow (BM) PC population.

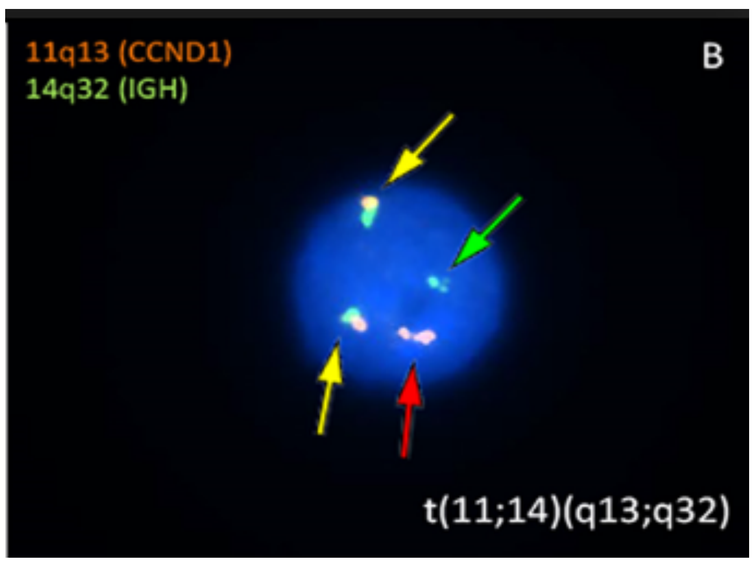
Methods

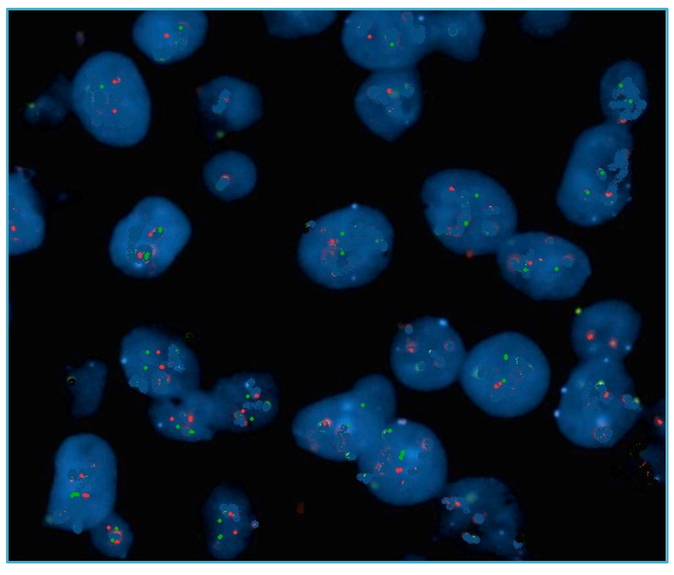
From January 2006 to January 2018, BM PC population was characterized by multi-color flow cytometry (FC) evaluating the CD19 CD20 CD28 CD38 CD56 CD138 CD45 CD117 surface marker expression. The intra-cytoplasmic (cy) cy-Ig kappa/cy-Ig lambda light chains expression on CD19 CD38 CD56 CD117 CD45 positive PC and on the sub-population of B lymphocytes was also studied to discriminate between clonal and pathological PC and to investigate the presence of clonal BM B lymphocytes. The most common cytogenetic abnormalities as t(11;14), t(4;14), del13q/14, 1p/1q gain, p53 deletion, t(14;16) and the hyper-diploid status were evaluated by FISH analysis.

FLOW CYTOMETRY: Ig LIGHT CHAINS RESTRICTION by KAPPA/LAMBDA *RATIO* ON CD38^{bright} PC and CD19 positive B Lymphocytes



MM FISH analysis on CD138+ PC by immunomagnetic beads separation





Results

CD20 expression was documented by FC on malignant PC in 64 cases (15%), 43 multiple myeloma (MM) and 21 monoclonal gammopathy of uncertain significance (MGUS). IgG IgA and no (micromolecular) heavy chains expression was observed in 61% 23% and 16% of cases, with Kappa light chain prevalence (58%). The median age was 66 (40-86) years with a male predominance (56%). Cases were studied at diagnosis, 9 patients were evaluated at disease progression. The CD20 clonal population represented a median of 56% (22-99) of the clonal PC populations, showing a mosaic expression of this marker, which was confirmed in all cases studied during follow up. CD117 CD56 and CD19 expression was observed in 53% 45% and 20% of clonal PC respectively. In 7 cases a bright CD45 expression was documented. The analysis of BM lymphocytes documented immunoglobulin light chain restriction in 15% of cases. By FISH analysis, t(11;14) was the most common cytogenetic findings (23%) with a positive correlation between the percentage of CD20 clonal PC and the percentage of t(11;14) positive cells in the cases analyses after CD138 immunomagnetic beads separation.

Conclusions

CD20 positive PC neoplasms have a distinct immunophenotype characterized by an higher incidence of CD117 and CD19 expression compared to CD20 negative cases. As previously reported, we confirmed our results on the key role of kappa/lambda *ratio* for the identification of pathological PC at diagnosis as well as for flow-MRD monitoring. Our strategy of FC analysis allowed the identification of CD19+ clonal PC and clonal BM B lymphocytes in 20% and 15% of cases, supporting the involvement of a more immature B-cell precursor in the pathway of the CD20+ PC disorders. An high incidence of t(11;14) and the absence of p53 deletion were observed by FISH analysis.