P1. **Comparative study between EGIL and WHO 2008 classification in mixed phenotype acute leukemia**

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Introduction. The majority of acute leukemias (AL) can be classified as myeloid, B, or T lymphoid. In some cases this is not possible because of the evidence of expression of both lymphoid and myeloid lineage-specific antigens in the blast cells. These cases were defined previous as biphenotypic or biclonal AL by EGIL classification. Based on the classification of WHO (2008) biphenotypic and biclonal AL were redefined as the mixed phenotype acute leukemia (MPAL) assigning new criteria for this group of diseases. The purpose of this study was to compare EGIL and WHO (2008) classifications of MPAL and to present importance of immunophenotyping by multiparametric flow cytometry in their diagnosis.

Material and method. In our report we present 10 cases diagnosed initially with biphenotypic acute leukemia from a total of 272 acute leukemia patients. We performed immunophenptyping of bone marrow samples. Four-color immuno-fluorescence staining was used. The initial diagnosis was established according to EGIL classification. The same cases were reviewed according to WHO criteria for mixed phenotype acute leukemia.

Results. Based on GEIL scoring system, immunophenotypic analysis identified 6 cases of biphenotypic acute leukemia with B-lymphoid + myeloid lineage, 3 cases with myeloid and T-lymphoid lineage + 1 case of B+T lymphoid lineage. One patient was diagnosed with biclonal AL, both morphologically and immunologically two distinct population of blasts were identified, one with B lymphoid lineage and one with myeloid lineage. After reviewing these cases, it was found that in 2 cases (previously diagnosed as biphenotypic acute leukemia with B-lymphoid and myeloid lineage) did not fulfill the diagnostic criteria of WHO for MPAL. The final diagnosis in one case was AML with aberrant lymphoid markers and in one case was B-lineage ALL with aberrant myeloid markers. The other 8 cases were defined as MPAL according to WHO 2008 criteria.

Conclusions. By applying the WHO 2008 criteria, much stricter than the previous classification of EGIL, we can avoid overestimation of biphenotypic AL, some of them being redefined as ALL with aberrant myeloid markers or AML with aberrant lymphoid markers. This has particular implications for the choice of therapeutic strategy in patients with MPAL.