

## **Abstract: PB1717**

### **Title: CD19-NEGATIVE B- ACUTE LYMPHOBLASTIC LEUKEMIA: WHAT CHALLENGES?**

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#### **Background:**

Lymphocyte precursors in B-lineage acute lymphoblastic leukemia (B-ALL) express the pan B-cell marker CD19 in the most cases. However, CD19 may not be detected in rare cases of B-ALL. It would be a challenge to diagnose by flow cytometry (FC), monitor residual disease and study future target therapy of B-ALL without CD19 expression.

#### **Aims:**

We report our cohort of 4 cases of B-ALL CD19 negative and we discussed their characteristics, response to treatment and follow up data.

#### **Methods:**

We retrospectively reviewed data from patients with de novo B-ALL CD19 negative in adult and pediatric populations diagnosed in our laboratory and treated with the EORTC 58951 pediatric protocol and GRALL/GRAAPH adult protocol respectively during January 2013 and December 2021. FC immunophenotyping was performed in peripheral blood or bone marrow samples firstly by Epics XL® cytometer (BC) then FACS Canto II® (BD). Patients demographics, B-ALL characteristics, response to treatment [response to prophase, complete remission rate (CR) and treatment related mortality (TRM)], and follow up data [relapse rate, overall survival (OS) and event free survival (EFS)] were collected.

#### **Results:**

Four pediatric cases were diagnosed as B-ALL CD19 negative (4 / 146 cases). Median age of patients was 12 years (range: 2-24 years, sex-ratio: 3). FC diagnosis was based on the expression of CD10, CD20, CD22, CD34, and cyCD79a by leukemic blasts with negativity of cyCD3 and cyMPO. CD19 was studied using two different clones and found to be negative in all cases. Aberrant expression of CD7, CD13 and CD117 markers was noted in one case.).

There were no significant differentiating features in clinical (tumor syndrome;  $p=0.451$ ), white cells count at diagnosis ( $p=1$ ), presence of unfavorable cytogenetic abnormalities ( $p=0.408$ ) and molecular transcripts ( $p=0.746$ ).

Our cases are classified into Low Risk (1 case), average Risk 2 (1 case) and very High Risk (2 cases). CD19 negativity doesn't affected the OS and EFS at 5 years (75% vs 71%;  $p=0.8$ ) and (75% vs 61%;  $p=0.671$ ) respectively, with an inferior good response to prophase (50% vs 83%;  $p=0.06$ ), a superior CR rate to induction (100% vs 82%;  $p=0.8$ ), an inferior relapse rate (25% vs 33%;  $p=0.7$ ), and an inferior TRM in induction and consolidation (0% vs 2%;  $p=0.7$ ) and (0% vs 5%;  $p=0.6$ ) respectively.

#### **Summary/Conclusion:**

Lack of awareness of negative CD19 expression in B-ALL can leads to incorrect immunophenotypic diagnosis, treatment and monitoring of B-ALL, especially in laboratories using limited markers. Precise diagnosis of this entity should be based on clinical features, biological findings and molecular analysis.

Moreover, CD19 negativity in B-ALL does not appear to have an obvious prognostic impact in our study. Therefore, a larger study should be conducted using target therapy.

**Keywords:** B cell acute lymphoblastic leukemia, CD19, Flow cytometry

