HETEROGENEOUS EXPRESSION OF ANTIGENS USED IN MONITORING OF MINIMAL RESIDUAL DISEASE AT B-LYMPHOBLASTIC LEUKEMIA

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Antigen selection criteria used for the study

Panels of monoclonal antibodies from various therapeutic protocols

Protocols	MRD Panel
S. Jude Hospital (E. Coustan-Smith et al. 2006)	CD19/CD10 and/or CD19/CD34
AIEOP- BFM- ALL 2008 (J. Basso et al.)	1.CD58/CD10/CD19/CD34 2.CD20/CD10/CD19/CD34 3.CD10/CD34/CD19/CD45 4.CD10/CD11a/CD19/CD45
COG (M. Borowitz et al.)	4-col. 1.CD20/CD10/CD45/CD19 2.CD34/CD9/CD45/CD19 6-col. 1. CD20/CD10/CD38/CD58/CD19/CD45 2. CD9/CD13+CD33/CD34/CD10/CD19/CD45

Most frequent phenotype of blast cells at B-ALL:

- **CD19+/CD10+/CD34+**

(markers which are present in all protocols)

- **CD58, CD20**

(markers which are present in multicolor protocols)

Analysis of antigens expression:
CD34, CD20, CD10, CD58

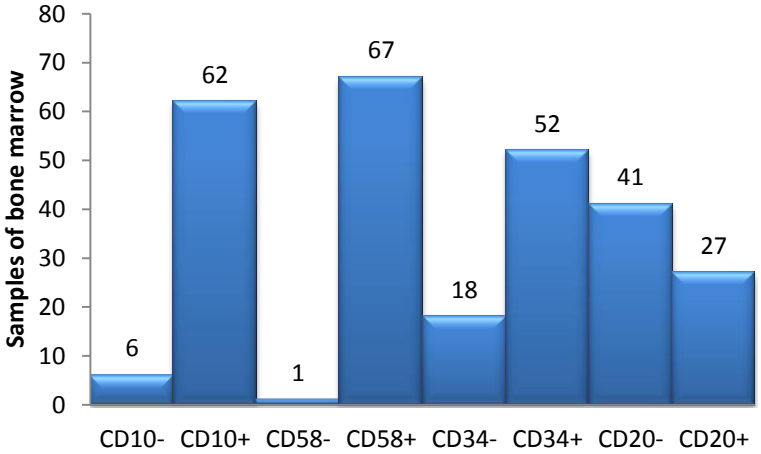
Study Design

68 patients diagnosed with B-ALL

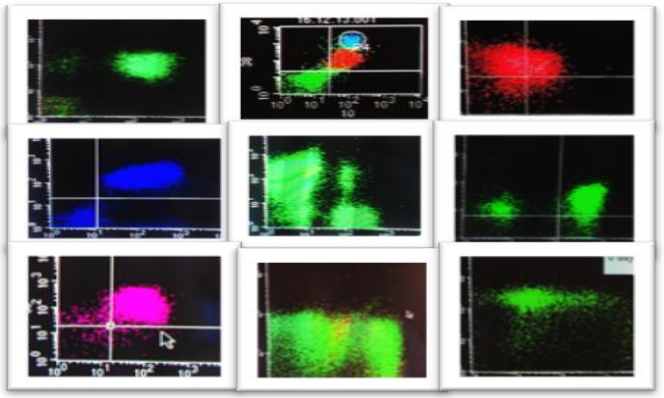
1. Detection of tumor cells

2. Evaluation of antigen expression

- **Generally in subgroup**



- **On a dot plot by staining with other antigens**

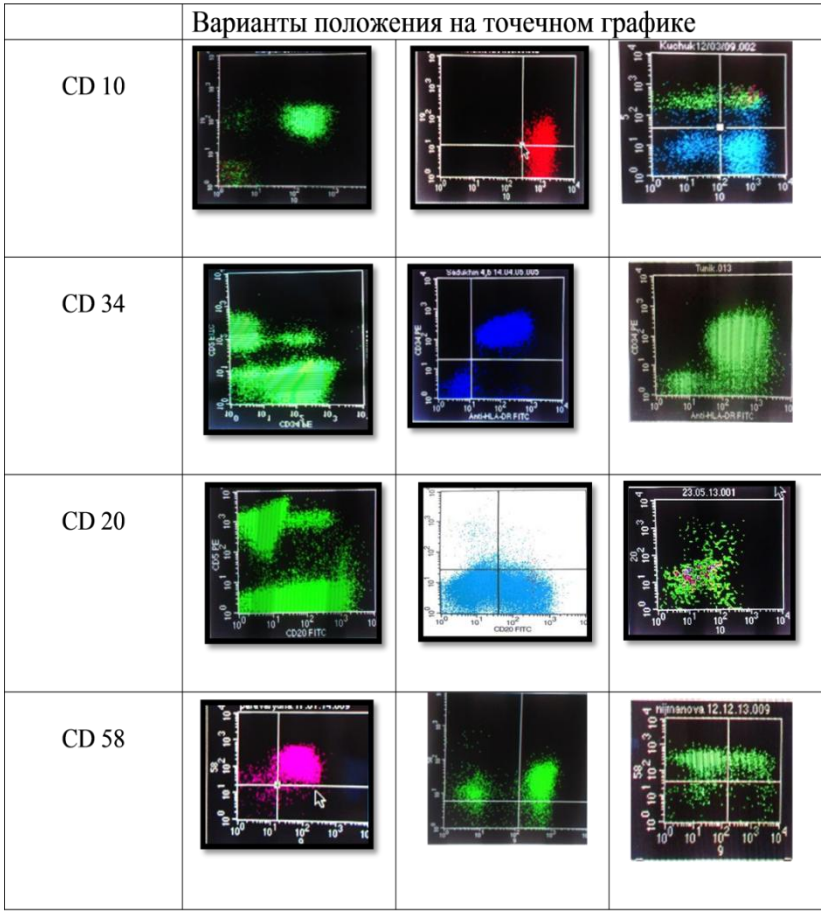


Nonhomogeneous distribution of the antigens CD34, CD20, CD10, CD58

Total numbers

Antigen	Absence of expression (number)	Positive expression		
		Presence of both positive and negative cells (number)	Homogeneous expression (number)	Heterogeneous distribution at double dyeing (%)
CD 10	6	62		
		12	50	4
CD 34	18	50		
		14	36	14
CD 58	1	67		
		13	54	67
CD 20	41	27		
		9	18	46

Variation of the distribution during double dyeing with T-lymphoid, myeloid and activation antigens



Conclusions

- In the majority of the samples with homogeneous expression of standard “anker” diagnostic markers $CD10^+/CD19^+$, $CD34^+/HLA\text{-}DR^+$ at least one of the antigens CD10, CD34, CD58 or CD20 has nonhomogeneous distribution over the population of lymphoblasts
- B cell population in the early stage of the disease is heterogeneous and there are populations with different physical and functional characteristics