**Title: Practical value of CD48 in T acute lymphoblastic leukemia MRD- using 13-color multi parametric Flow Cytometry.**

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**INTRODUCTION**

CD48 is an immunoglobulin superfamily receptor expressed on the surface of mature T-cells and NK-cells. It has been reported to be downregulated in T-ALL blasts and suggested to be useful marker in T-MRD. However, data on the utility of CD48 in T-ALL MRD monitoring is scarce and there is a need to evaluate its additional value in real world practice.

**Methods**

CD48 expression was studied in 217 samples including 27 diagnostic and 185 MRD from T-ALL patients. Samples were processed by bulk-lyse stain method, acquired using DxFLEX and analysed with Kaluza-software. Cells were stained with 13-color antibody panel that includes sCD3, cyCD3, CD4, CD5, CD7, and CD8, CD16/CD56, CD34, CD38, CD45, CD48, CD94 and CD161. Additional value of CD48 was studied and compared with conventionally standardized T-MRD approach.

**Results**

In 27 diagnostic samples, the CD48 expression was negative/downregulated in 24/27 cases (88.88%) with the median (range) proportion of CD48-negative blasts of 98.39% (62.23-100%).

Of 185 TMRD samples, 96 (51.89%) were MRD-positive using conventionally approach with median MRD of 0.23% (0.0009-87%). In MRD-positive samples, complete loss of CD48 expression was noted in 66/96(68.42%) and partial loss in 13/96(13.54%), thus supported the MRD detection in 81.96%. In 10 MRD-positive samples, the MRD was highly suspicious and loss of CD48 helped to confirm it. Notably, in 11 MRD-positive samples, the downregulation of CD48 expression had identified MRD in false negative samples with conventionally approach and hence it was the main marker to identify MRD.

Of 90 MRD-neg samples,18/90(20%) showed downregulation of CD48 in normal T/NK cells with median of CD48-negative cells 0.44% (0.0002-3.38%) which could result in false-positive MRD and was avoided using conventional approach.

**Conclusions: CD48 has a definite additional value in TMRD monitoring. It should be interpreted cautiously with conventional T-MRD panel that essentially includes CD4, CD5, CD8, and CD38.**