Flow Cytometric Assessment of CD30 Expression in Adult Patients with Acute Leukemia

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Abstract

Background: CD30 expressed by types of T- and B-cell non-Hodgkin's Lymphoma, such as anaplastic large cell lymphoma (ALCL). **Aim of this study** was the assessment of CD30 expression in patients with newly diagnosed and relapsed/refractory acute leukemia of either B or T cell lineages and its correlation with high risk parameters. **patients and methods** 30 refractory / or relapsed cases of AML and ALL either T or B lineages, enrolled in this study. CD30 percentage expression was assessed by flow cytometry on bone marrow sample or peripheral blood. **Results:** CD30 (+ve) was found in 46% of cases while cases with cutoff <20% (-ve) was found in 54% of all leukemia cases, CD30 expression was higher in ALL especially in T-ALL with mean value of (44.564±27.158) with significant increase in relapsed T-ALL (P value 0.031). CD30 expression in relapsed AML and ALL showed an increased percentage but not yet statistically significant. Significant correlation was found with high risk parameters as WBCs (>100,000), PLT (<30,000) and CD30 expression in T ALL patients with P value (0.038) and (0.021) respectively. ROC curve revealed that the accuracy of sensitivity and specificity was 69.9%. **Conclusion:** CD30 is a significant diagnostic tool in cases of acute leukemia especially in newly and relapsed T-ALL, also it can be labeled to be targeted therapy.

Background

The receptor of CD30 is expressed on activated B- and T-cells, and intercedes in signal transductions involving nuclear factor- β (NF- κ β) transcription.

Outcomes of CD30 stimulation have been reported, including cell cycle arrest, apoptosis, and activation of the pro-survival transcription factor NF- κ B.

A positive association between rapid Minimal Residual Disease reduction and early detection and the duration of CR was found.

Objective

Assessment of CD30 expression in patients with newly diagnosed and relapsed/refractory acute leukemia of either B or T cell lineages and its correlation with high risk parameters.

- To relate variables to CD30 and its prognostic indicators

Patients and Methods

Patients:

A Total number of 50 adult subjects were included in the study, 10 Denovo cases of AML patients and 10 Denovo cases of ALL, 15 refractory / or relapsed cases of AML and 15 refractory / or relapsed cases of ALL of either T-cell or B-cells lineages.

Methods:

BM aspirate or peripheral blood specimens were collected in EDTA-anticoagulated tubes and processed within 24 hrs of collection. After incubation with monoclonal antibodies for 15 min at 4°C, erythrocytes were lysed with ammonium chloride.

Tables

Fig (1): Kaplan-Meier curve showed negative correlation between CD30 and Overall survival not yet statistically significant.

Results

A positive CD30 with Cutoff >20% was found in 23 patients (46%) versus (54%) of patients with cutoff (<20%).

CD30 expression revealed significant increase in CD30 expression in ALL patients (**P value < 0.05**). But there was no statistically significant difference between different Immunophenotyping of AML or ALL.

There was no statistically significant difference between different Immunophenotyping of AML or ALL. No significant relation was found between newly diagnosed and relapsed cases of AML and CD30 expression (P-value > 0.05).

There was a statistically significant relationship between the relapsed cases of ALL and CD30 expression with CD30 expression higher in patients with T-ALL (**P-value 0.031**).

Comparison between newly diagnosed AML and ALL and Relapsed cases as regard CD30 expression revealed increased CD30 expression in relapsed cases but not yet statistically significant (**P-value > 0.05**).

There was a significant positive correlation between WBC (>100,000), PLT (<30,000) and CD30 expression in T ALL patients, while there was no significant correlation between LDH, PLT (<30,000), MRD and CD30 expression in B-ALL patients. Moreover, there was no significant correlation between LDH, MRD and CD30 expression in T-ALL patients.

Fig(2) ROC curve revealed that the accuracy of sensitivity and specificity was 69.9.

Conclusion

Higher level of CD30 was associated with ALL cases.

T-ALL either relapsed or resistant cases expressed higher level of CD30 than relapsed or resistant cases of B-ALL.

CD30 expression affects the survival of patients with acute leukemia but not statistically significant. Possibility for target anti CD30 for relapsed and resistant cases of T-ALL.

References

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