Elevated Serum ELABELA and SERPINA3 as Novel Biomarkers to Predict Poor Prognosis in Egyptian Chronic Lymphocytic Leukemia Patients

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Background

Chronic lymphocytic leukemia (CLL) is the most common kind of adult leukemia worldwide. Increased expressions of serpin peptidase inhibitor clade A member 3 (SERPINA3) and apelin receptor early endogenous ligand (ELABELA) have been observed in various malignancies, however, there is little information on their clinical importance in CLL[1,2].

Objective

The purpose of this study was to determine serum levels of SERPINA3 and ELABELA in CLL patients.

Patients & Methods

This prospective study included 67 newly diagnosed CLL patients and 66 healthy individuals as a control group from April 2020 to March 2022 at Oncology Center, Mansoura University, Egypt . The CLL patients indicated for therapy received Fludarabine, Cyclophosphamide, and Rituximab (FCR) for 17 p deletion (del.17p) negative eligible patients, Chlorambucil for del.17p negative non-eligible patients, and Ibrutinib or high-dose Methylprednisolone (HDMP) for del.17p positive patients. The serum levels of SERPINA3 and ELABELA were determined using an enzyme-linked immunosorbent assay.

Results

Our study found that serum levels of SERPINA3 and ELABELA were significantly higher in CLL patients than in the control group with p<0.001 and p=0.001, respectively. There was a significant increase in serum levels of SERPINA3 and ELABELA in Rai IV and Binet C stages with p<0.001 for each. Both ELABELA and SERPINA3 levels were significantly higher in CLL patients with positive del.17p compared to negative patients with p=0.04 and p=0.008, respectively. Both increased levels of SERPINA3 and ELABELA were associated with decreased response rates and shortened progression-free survival (PFS) and overall survival (OS). Only ELABELA was an independent predictor of shorter PFS in univariate analysis. SERPINA3 and positive del.17p were significant predictors of shorter OS in univariate analysis. In multivariate analysis, only SERPINA3 was an independent risk factor for shorter OS.

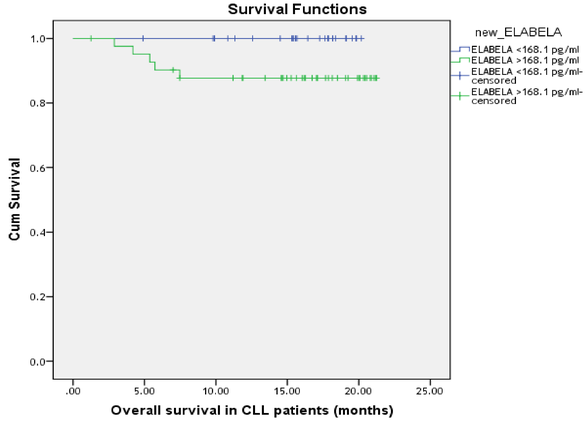


Figure 1: Overall survival (OS) in CLL patients as regard ELABELA levels

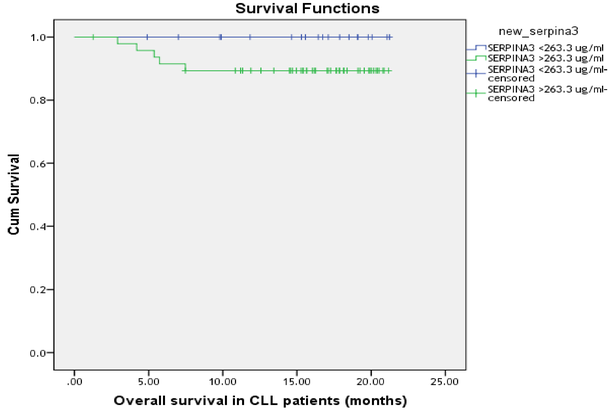


Figure 2: Overall survival (OS) in CLL patients as regard SERPINA3 levels

Conclusion

SERPINA3 and ELABELA are poor prognostic biomarkers in CLL patients associated with dismal outcomes. SERPINA3 and ELABELA may be a promising therapeutic target for CLL treatment in the future.

References

1- Chng, S.C., et al., ELABELA: a hormone essential for heart development signals via the apelin receptor. Dev Cell, 2013. 27(6): p. 672-80.

2- Zhang, Y., et al., Overexpression of SERPINA3 promotes tumor invasion and migration, epithelial-mesenchymal-transition in triple-negative breast cancer cells. Breast Cancer, 2021. 28(4): p. 859-873. .