Significance of TP53 Codon72 in a Cohort of Egyptian Chronic Lymphocytic Leukemia Patients

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Background

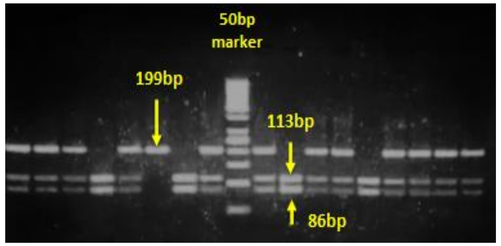
Chronic lymphocytic leukemia (CLL) is a heterogeneous disease. This heterogeneity is partly explained by the diverse genetic aberrations identified in patients. Due to the high heterogeneity of CLL, clinicians use prognostic biomarkers and risk scoring systems to guide treatment decisions. The codon 72 arginine-to-proline polymorphism (rs1042522) at the p53 locus affects cancer development, as well as response to therapy and survival of cancer patients.

Objective

The aim of the present study was to investigate the correlation of TP53 codon72 Arg/Pro polymorphism with the evolution of the disease and prognostic markers in CLL patients attending the oncology centre Mansoura University (OCMU).

Materials & Methods

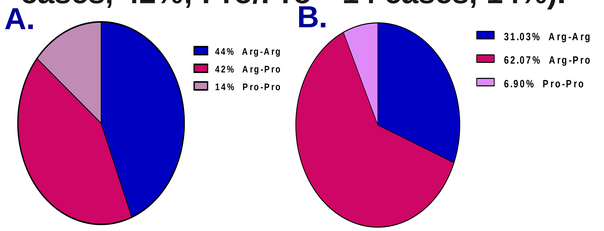
We examined TP53 codon 72 polymorphism by restriction fragment length polymorphism (RFLP) in 100 newly diagnosed CLL patients and in 87 healthy controls.



Agarose gel picture showing RFLP products: heterozygous Arginine/Proline genotype (199, 113 and 86 bp bands); homozygous Proline genotype (199 bp band); homozygous Arginine genotype (113, 86 bp bands).

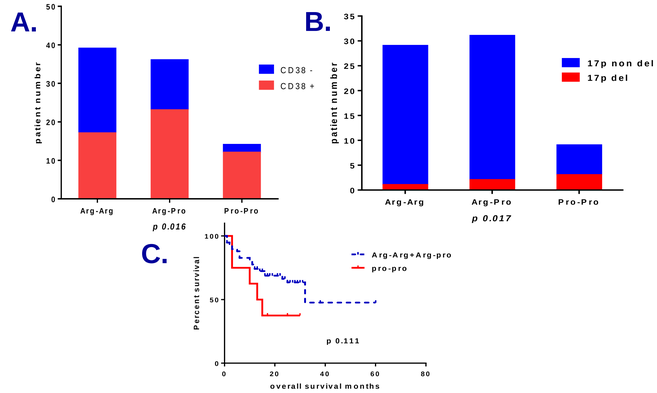
Results

- Analysis of the TP53 codon 72 polymorphism in CLL samples resulted in frequencies of 0.65 and 0.35 for the G and C allele, respectively.
- (Arg/Arg—44 cases, 44%; Arg/Pro—42 cases, 42%; Pro/Pro—14 cases, 14%).



Frequency of TP53 codon 72 polymorphism. A. in CLL patients. B. In Healthy Controls (*p=0.019*).

- In the comparative analysis of the three groups, we observed that 92% of male patients had Pro/Pro genotype.
- CLL patients with the Pro/Pro genotype showed a significant association with CD38 expression and 17p deletion (p = 0.016 and 0.017, respectively) in comparison to the other groups.
- Survival was not significantly different comparing the p53 codon 72 subgroups. However, patients with Pro/Pro allele had lower overall survival months.



Crrelation of TP53 codon 72 polymorphism with. A. CD38*(p=0.016).* B. 17p del*(p=0.017*). C. Overall survival.

Summary

- Pro/Pro genotype contributes to increased susceptibility to CLL risk in our population.
- I n this study we observed that genotype (Pro/Pro) has been associated with expression of CD38, 17p del and male gender.

References

1. **Kochethu, G., Delgado, J., Pepper, C., Starczynski, J., Hooper, L., Krishnan, S., ... & Pratt, G. (2006).** Two germline polymorphisms of the tumour suppressor gene p53 may influence the biology of chronic lymphocytic leukaemia. Leukemia research, 30(9), 1113-1118.
2. **Basabaeen, A. A. M., Abdelgader, E. A., Babekir, E. A., Abdelrahim, S. O., Eltayeb, N. H., Altayeb, O. A., ... & Ibrahim, I. K. (2019).** TP53 gene 72 arg/pro (rs1042522) single nucleotide polymorphism contribute to increase the risk of b-chronic lymphocytic leukemia in the Sudanese population. Asian Pacific journal of cancer prevention: APJCP, 20(5), 1579.