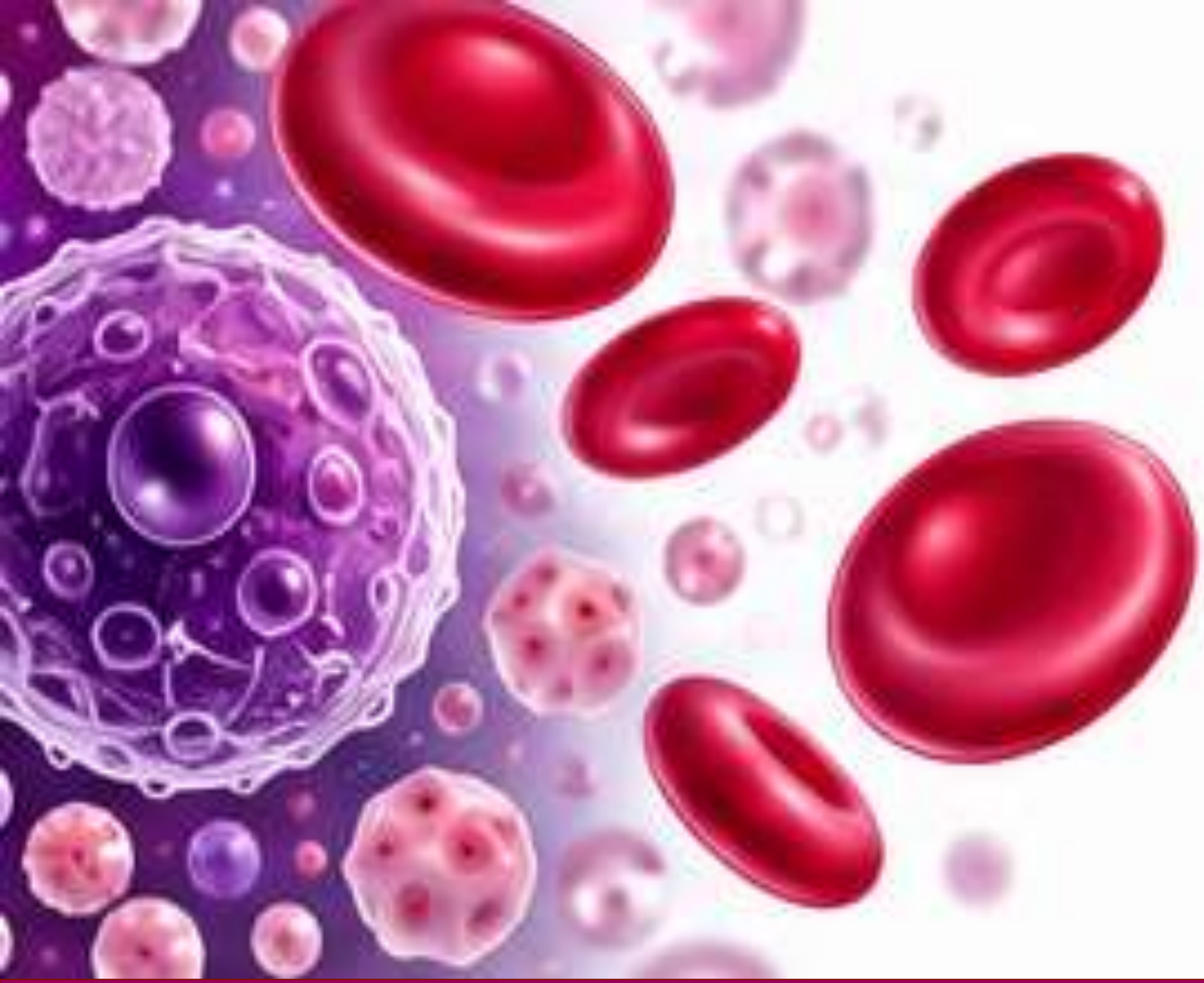




Mutational Landscape and Hematological Correlations in Myeloproliferative Neoplasms: A 5-year Retrospective Study from a Lebanese Tertiary Center



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في بيروت

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Introduction

- Data on the molecular profile and driver mutations of Myeloproliferative Neoplasms (MPNs) in the Levant region remain extremely scarce [1].
- Beyond diagnosis, there is growing interest in how *JAK2* V617F allele burden (VAF) impacts hematological counts and systemic inflammation indices like the SII [2,3].

Aims

- To profile the mutational spectrum of Lebanese MPN patients.
- To evaluate the relationship between *JAK2* V617F mutant allele burden, routine hematological parameters, and systemic inflammatory markers.

Methods

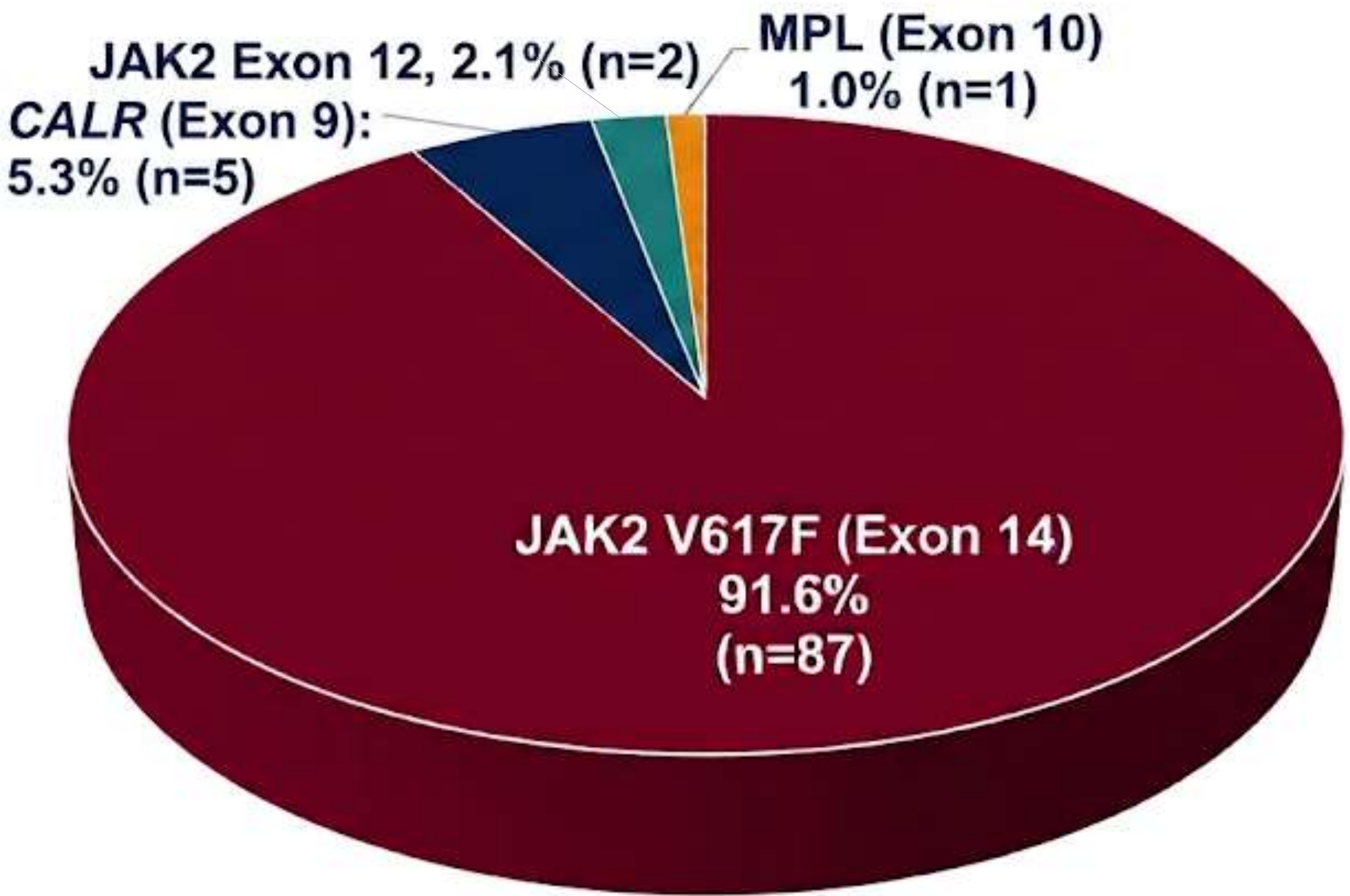
- Design and Population: 5-year retrospective cohort (2021–2026) of PCR-confirmed MPN patients at a Lebanese tertiary center.
- Data and Parameters: Analyzed *JAK2* V617F Variant Allele Frequency (VAF) against routine CBC parameters (WBC, Hb, Monocytes, RDW) and calculated SII.
- Statistical Analyses: Non-parametric correlations (Spearman's rho), subgroup comparisons (Mann-Whitney U by mean VAF), and linear regression.

Abbreviations: MPNs: Myeloproliferative Neoplasms; VAF: Variant Allele Frequency; SII: Systemic Immune-Inflammation Index; PCR: Polymerase Chain Reaction; CBC: Complete Blood Count; WBC: White Blood Cell; Hb: Hemoglobin; RDW: Red Cell Distribution Width.

Results

Study population: 95 mutation-positive patients with a mean age of 61 years (range 26-92), 52 females (54.7%) and 43 males (45.3%).

1. Mutational Spectrum



2. Bivariate Analysis

VAF was significantly associated with:

- WBC (spearman's rho =0.891; p=0.01)
- Hb (rho=0.733; p =0.05)
- Absolute Monocytes Count (rho=0.636; p =0.05)
- Systemic Immune-Inflammation Index (SII) (rho =0.721; p=0.05)

4. Linear Regression Analysis

Outcome	B	P-value
SII	129.52	0.037
Hb	0.068	0.010
RDW	0.053	0.030

3. Group Comparison by VAF

A significant difference was observed between low and high VAF groups in:

- WBC (mean rank = 3.2 vs. 7.8; U=1; p=0.016)
- Hb (mean rank = 3 vs. 8; U=0; p=0.008)
- SII (mean rank 3.4 vs. 7.6; U=2; p=0.032)

Higher *JAK2* V617F allele burden is associated with higher hematological counts and systemic inflammation, as reflected by SII, and predicts increases in SII, Hb, and RDW.

Conclusion

- JAK2* V617F is the main driver mutation in this Lebanese MPN cohort.
- Higher allele burden directly correlates with increased blood counts and systemic inflammation.
- Calculating SII from a simple CBC offers a cost-effective, practical tool to gauge biological disease activity in resource-limited clinical settings.

References

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