Biological Drivers of Clinical Phenotype and Therapeutic Landscape in Myelofibrosis: Insights From a Single-Center Study

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Introduction

- Myelofibrosis (MF) is a heterogeneous myeloproliferative neoplasm that presents with a spectrum of clinical and biological features, ranging from a myeloproliferative phenotype to a myelodepletive (cytopenic) phenotype.
- The cytopenic phenotype, more prevalent in primary MF (PMF), is characterized by low blood counts and is associated with poorer prognosis.
- Recent studies suggest that differences in somatic driver mutations, allelic burden, and the acquisition of non-driver mutations contribute to the observed phenotypic diversity, prognosis, and therapeutic responses, especially to JAK2 inhibitors

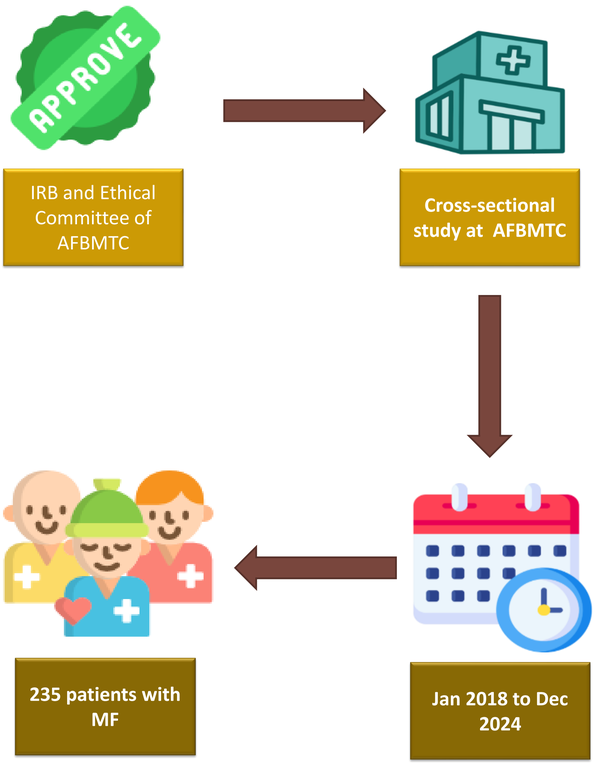
AIM

- To review the biological and clinical features of the MF disease spectrum and associated treatment considerations

Objectives

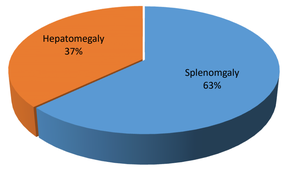
- To characterize the clinical and biological spectrum of myelofibrosis (MF) patients, focusing on the prevalence of myeloproliferative versus cytopenic phenotypes, associated somatic mutations, and treatment patterns in a retrospective cohort from the Armed Forces Bone Marrow Transplant Center (AFBMTC).

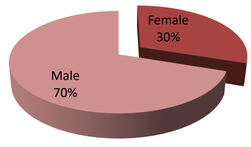
Methods

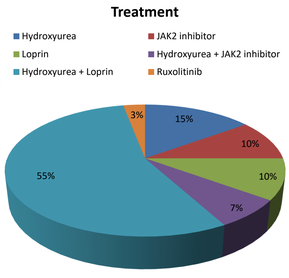


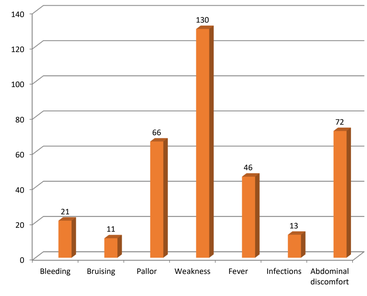
Results

- We identified 235 MF patients who fulfilled the inclusion criteria.
- The median age was 55 years, with a male predominance **(n=164, 70%).** Seventy-one **(30%)** patients were female.
- Of the patients, **153 (65%)** were Punjabi and 48 **(21%**) were Pathan.
- Generalized weakness was the most common presenting symptom.
- The JAK2 V617F mutation was detected in **54%** of cases.
- Most patients received cytoreductive therapy, while only 10% were treated with JAK2 inhibitors.









Summary

- Our findings underscore the clinical and biological heterogeneity of MF and highlight the need for phenotype-driven therapeutic strategies, particularly for patients with the cytopenic phenotype who face limited treatment options.

Discussion

- Primary myelofibrosis demonstrates distinct cytopenic and proliferative phenotypes, each driven by molecular heterogeneity and immune dysregulation.
- Our cohort, predominantly middle-aged males, most frequently presented with weakness, splenomegaly, and JAK2V617F positivity.
- Survival outcomes and treatment response were consistent with international data, underscoring the need for phenotype-adapted therapeutic strategies

References

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