CLINICAL AND HEMATOLOGICAL FEATURES OF YOUNG PATIENTS WITH PRIMARY MYELOFIBROSIS: AN UPDATED RETROSPECTIVE ANALYSIS FROM AZERBAIJAN

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Introduction

Primary myelofibrosis (MF) is a clonal Philadelphia chromosome-negative myeloproliferative neoplasm (Ph-MPN) usually occurs in the 6th decade of life. Understanding the clinical and molecular patterns in younger patients may help refine risk stratification and treatment strategies.

Aim

Describe the clinical, hematological, and molecular characteristics of young patients (≤50 years) with PMF from Azerbaijan and compare them with those of elderly patients.

Methods

This was a retrospective, descriptive cohort study of PMF patients diagnosed between July 1992 and December 2024 who were registered at the National Hematology and Transfusiology Center of Azerbaijan. Patients were considered young if they were <50 years of age at the time of diagnosis. Data were compared with those of elderly patients.

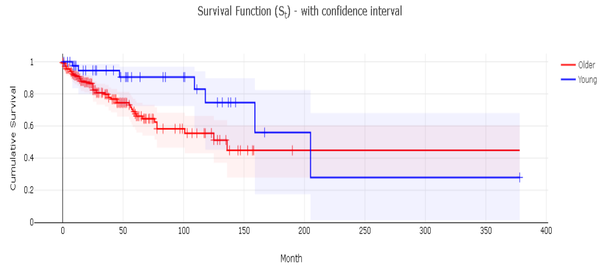
Results

Of 241 PMF patients, 44 (18.3%) were young, with a median age of 43.1 (range: 19–49) years; 68.2% were female (***P*=0.016**). Prefibrotic PMF was more common in this group (36.8% vs 18.8%, ***P*=0.028**). Compared with older patients, young patients had higher hemoglobin (12.27 g/dL vs 11.05 g/dL, ***P*=0.028**), lower WBC and neutrophils (11.84×10^9/L vs 7.88×10^9/L, ***P*=0.006**; 7.73×10^9/L vs 12.39×10^9/L, ***P*=0.003**; respectively), and smaller spleen and liver sizes (18.64 cm vs 20.48 cm, ***P*=0.012**; 15.23 cm vs 16.54 cm, ***P*=0.003**; respectively). PLR was higher in young patients (336.1 vs 214.0; ***P*=0.004**). IPSS risk categories differed significantly (***P*=0.005**), with 51.2% of young patients in the low-risk group compared with 24.3% of older patients. Twenty (71.43%) patients were JAK2 mutation-positive in the young group. The median follow-up was 30.6 (IQR: 12.6–65.2, range: 0.7–378) months. One patient (2.27%) progressed to the blast phase (48 months after diagnosis). Median overall survival (OS) was significantly better in young patients (205 months vs 120 months, log-rank test: χ^2=5.48, ***P*=0.019**)

Table 1. Clinical features of young vs older PMF

Variable	Young, N=44	Older, N=197	P value
Male **Female**	14 (31.82%) 30 (68.18%)	105 (53.3%) 92 (46.7%)	**0.016**
Prefibrotic PMF **Overt PMF**	16(36.8%) 28(61.2%)	37(18.8%) 160(81.2%)	**0.028**
IPSS, Low	22 (51.16%)	45 (24.32%)	**0.005**
Hgb, g/dl	12.27 (± 3.25)	11.05 (± 3.27)	**0.028**
WBC, ×10⁹/L	11.84 (± 9.54)	17.88 (± 18.97)	**0.006**
Hgb, g/dl	12.27 (± 3.25)	11.05 (± 3.27)	**0.028**

Graphic 1. Survival curves of young vs older PMF



Discussion and summary

Our study demonstrates that young PMF patients differ significantly from older patients, showing earlier-stage diagnosis, lower IPSS scores, and better OS. This findings are largely consistent with the Mayo Clinic experience regarding favorable hematologic parameters, low-risk disease, and improved overall survival in younger PMF patients(1). However, key differences exist in **gender distribution**, **mutation profile**, and **limited molecular/genetic data** in our setting. These gaps underscore the need to expand genetic profiling and standardized risk assessment in Azerbaijan to align with international standards. These findings also align with Horvat et al. (2024), who also reported milder disease at presentation in younger individuals(2). The retrospective nature, limited sample size, and lack of complete molecular profiling are key limitations. Larger, prospective studies with full genomic data are needed to validate these results.

References

1. Szuber N. Am J Hematol. 2018 Dec;93(12):1474-1484
2. Horvat NP. Ann Hematol. 2024 Jan;103(1):117-123

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