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Insights Into the Management of Chronic Myeloproliferative Neoplasms: Repercussions of Age and Molecular-Genetic Profiles

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INTRODUCTION

Chronic myeloproliferative neoplasms (CMPNs) are the most common leukemias in the aging population, being characterized in the advanced stages by recurrent evolution and increased global disease burden.

AIM

To assess the effect of age and molecular-genetic profile on the management of CMPNs.

METHOD

Design: We performed an observational cohort study. The diagnosis was determined based on WHO and European LeukemiaNet criteria. The patients' follow-up was related to hospitalized and outpatient care. Our cohort study enrolled 91 elderly patients with different phases of chronic myeloid leukemia (CML), primary myelofibrosis (PMF), and polycythemia vera (PV), who were treated at the Institute of Oncology between 1995 and 2023.
Interventions: The used antineoplastic regimens were single-agent therapy with TKIs, interferon 2α, alkylating agents, and antimetabolites. Descriptive statistics and big data analytics were applied.
Outcomes Measures: Complete hematological response (CHR) rate estimated the short-term results, and overall survival (OS) estimated the long-term results.

RESULTS

Thirty-four (37.3%) patients with PMF, 26 (28.6%) with CML, and 31 (34.1%) with PV were diagnosed in the elderly age groups. The quantitative real-time PCR revealed p210 transcript of the BCR-ABL1 gene in all cases, with the range of 23.17% to 100%. Deep molecular responses were recorded under treatment with TKIs in 59.3% of CML cases. The relapses occurred in 71.4% of CML patients with the initially increased LDH values and in all patients with T315I mutation. The survival of CML patients ranged between 21 and 234.8 months (median: 93.97 ± 4.52 months). CHR was achieved in all 31 patients with PV. The response lasted 0.4 to 7 years (median: 5.8 years). In elderly patients, OS >1 year constituted 100%, >5 years—93.5%, >10 years—76.4%, being lower than OS registered in all PV patients (>1 year—100%, >5 years—98.6%, >10 years—85.9%), but totally superior to that one in PMF patients.

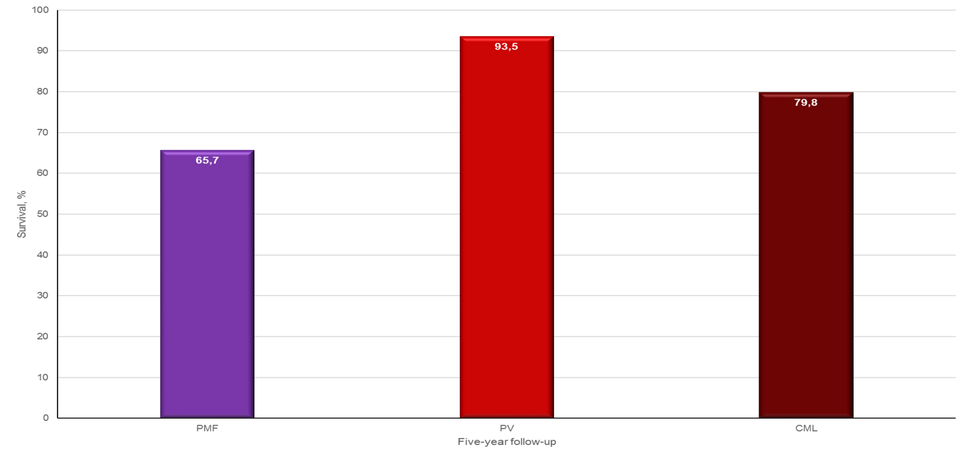


Figure 1. Overall survival of patients with CMPN

CONCLUSIONS

Respectless of CML patients' age, T315I and K222R/665A mutations, as well as the elevated LDH, emerged into a higher relapse rate and resistance to TKIs. The OS in elderly patients was inferior to those in CMPNs totality because of age-related diseases and vascular events from leuko-thrombocytosis.

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