Ten Year progression-free survival among chronic myeloid leukaemia adults after tyrosine kinase inhibitor therapy at a National Reference Centre for Haematology in Malaysia

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ABSTRACT

Introduction: Chronic myeloid leukaemia (CML), driven by the Philadelphia chromosome, has become manageable due to tyrosine kinase inhibitors (TKIs). While TKIs have extended survival, understanding long-term progression-free survival (PFS) rates and influencing factors is crucial for optimizing care in Malaysia. **Objective:** This study estimates and compares the 10-year PFS rates across various factors among CML patients receiving TKI therapy at Hospital Ampang, Selangor. **Materials and Methods:** A retrospective cohort study was conducted on 389 CML patients initiated on TKIs (imatinib or nilotinib) between 2012 and 2021. Patients who underwent hematopoietic stem cell transplantation (HSCT) or transferred out were excluded. The event was progression to accelerated/blast phases or death. Censored observations included patients who were alive without progression or lost to follow-up (LTFU). PFS was measured from TKI initiation to the event. Kaplan-Meier estimates and log-rank tests used for analysis. **Results:** There were 66 events (17.0%). PFS rates at 1, 3, 5, and 10 years were 97.7%, 93.9%, 88.7%, and 76.6%, respectively. Better PFS was observed in patients <60 years at TKI initiation ($p<0.001$) and with a Charlson Comorbidity Index (CCI) of 2–3 ($p=0.001$). Clinically, baseline blasts <10% ($p<0.001$), absence of BCR-ABL1 kinase domain mutation ($p=0.001$), low-risk EUTOS long-term survival (ELTS) score ($p<0.001$), and diagnosis in the chronic phase (CML-CP) ($p<0.001$) were favourable. Additionally, a high TKI medication possession ratio (MPR) ($p<0.001$), absence of adverse events requiring TKI dose adjustment ($p<0.001$), no follow-up defaults ($p<0.001$), <3 concurrent medications ($p<0.001$), no TKI switching ($p=0.012$), achieving complete cytogenetic response (CCyR) at 6 months ($p<0.001$), and major molecular response (MMR) at 12 months ($p=0.007$) and 24 months ($p=0.007$) were also linked to improved PFS. **Conclusion:** Optimal adherence, and careful monitoring are vital for managing CML. Patients under 60, with moderate comorbidities, lower baseline blasts, absence of BCR-ABL1 mutations, and a low-risk ELTS score showed significantly better PFS rates. Meeting key response milestones at specific time points was crucial for improving long-term outcomes, highlighting the need for personalised treatment strategies.