The Utility of Lactate Dehydrogenase as a Prognostic Indicator for Primary Myelofibrosis

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Introduction. Myelofibrosis (MF) is characterized by bone marrow fibrosis driven by megakaryocyte-derived growth factors such as TGF-β and PDGF, with a median survival of 3-7 years. While Lactate Dehydrogenase (LDH) is routinely measured in other cancers, its prognostic value in MF remains unclear. This study aimed to evaluate LDH as an independent prognostic marker and predictor of clinical outcomes.

Methods. A retrospective cohort of patients diagnosed between 2012 and 2022 at The University of Kansas Medical Center was analyzed. Baseline and serial LDH levels were reviewed alongside clinical, molecular, and cytogenetic data, including anemia severity, circulating blasts, WBC count, driver mutations (JAK2, MPL, CALR), high-risk mutations, and treatment history.

Results The study identified 120 Myelofibrosis patients who met inclusion and exclusion criteria. LDH increases showed a low-to-moderate positive correlation with spleen size, suggesting potential utility of LDH as a non-imaging biomarker for splenic burden in Myelofibrosis. However, a weak correlation ($R^2 = 0.028$) between changes in LDH and platelet count indicated limited predictive value of platelet trends. Similarly, minimal correlation ($R^2 = 0.017$) between baseline JAK2 V617F allele frequency and changes in LDH suggests variability in LDH response to this clonal mutation. Among the cohort, 44 patients had a mean survival of 1,081 days.

Conclusions. Group segmentation based on LDH changes (Decrease vs. Increase) showed a weak association with survival length. Additionally, linear regression analyses did not reveal significant predictive outcomes related to LDH changes. These findings raise questions about reliability of LDH as a prognostic biomarker for Myelofibrosis progression.