Prognostic Impact of Pretransplant LDH, Ferritin, and HALP Score as Predictors of Relapse After Autologous Stem Cell Transplantation in Patients Undergoing Autologous Stem Cell Transplantation

SH. EL-ASHWAH, O. KHALED , S. ELASHWAH, M. ELBOGHDADY, M. MABED, S. SHAMAA, E. AZMY
Oncology Center Mansoura University, Mansoura, Egypt

Introduction

Disease progression/relapse was the main cause of death after high-dose therapy followed by autologous hematopoietic stem cell transplantation (ASCT).

Aim

To determine the prognostic significance of pretransplant values of LDH, ferritin, NLR, and PLR in patients who underwent autologous stem cell transplant. Furthermore, HALP score was calculated by (hemoglobin [g/L]×albumin [g/L]×lymphocyte count [$\times 10^9$/L])/platelet count ($\times 10^9$/L).

Patients and Methods

We retrospectively reviewed data of 103 adult patients who underwent ASCT between 2019 and 2023. The study was conducted at the Oncology Center of Mansoura University, Egypt. Of the 103 patients: 46 were female, 57 were male, median age was 41 years (range: 19–67 years), and 64 had been diagnosed with lymphoma and 39 with myeloma.

Intervention

Patients were divided into two groups using the median cut-off values of pretransplant LDH (196 U/L), serum ferritin (274 ng/mL), NLR (2.43), PLR (155.65), and HALP (35). ROC and AUC were conducted for estimation of the value of ferritin, LDH, PLR, and HALP score in the prediction of relapsed cases from complete remission.

Results

In this study, high ferritin (P<0.001), high LDH (P=0.032), and high PLR (P=0.047) were significantly associated with posttransplant relapse. High NLR (P=0.162) and low HALP score (P=0.284) were associated with posttransplant relapse but were statistically insignificant. The AUC from the ROC analysis for discrimination of relapse from CR was 0.818 (95% CI, 0.730–0.906, P≤0.001) for ferritin, 0.665 (95% CI, 0.521–0.809, P<0.019) for LDH, 0.673 (95% CI, 0.565–0.781, P=0.014) for PLR, and 0.698 (95% CI, 0.593–0.804, P=0.005) for HALP score. Median DFS of cases was 25.4 months. High ferritin, LDH, and PLR were associated with shorter DFS (32.9%, 31.3%, and 57.0%, respectively) compared with low ferritin, LDH, and PLR (94.3%, 81.0%, and 73.9%, respectively) (P≤0.001, 0.017, and 0.039, respectively), whereas NLR and HALP score showed no significant difference. Median OS was 30.2 months. High LDH was associated with shorter OS (47.7%) compared with low LDH (95.2%) (P≤0.001). Meanwhile, ferritin, PLR, NLR, and HALP groups showed no significant difference.

Conclusion

Our study suggests that pre-HSCT ferritin, LDH, and PLR could be used as prognostic factors for patients who undergo HDT-ASCT.

References

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