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651.MULTIPLE MYELOMA AND PLASMA CELL DYSCRASIAS: BASIC AND TRANSLATIONAL

Prognostic Value of Ferritin in ASCT MM Patients: Integration with GEP Models and ISS Series Systems

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INTRODUCTION

Ferritin is associated with myeloma poor prognosis, but it was never included into current myeloma prognostic models. Here, we conducted an analysis of individual data from 3446 consecutive patients with multiple myeloma (MM) who received autologous stem cell transplantation (ASCT) therapy. The median follow-up time was 87.2 months (Q1: 44.1 months, Q3: 137.2 months). Using multivariate Cox regression analysis, we determined that serum ferritin was an independent risk factor for MM. We further investigated the prognostic effect of ferritin in the context of gene expression profiling (GEP) models and the different ISS series systems (including ISS, R-ISS, and R2-ISS). Our study showed that 39.5% of MM patients had high (above the normal range) serum ferritin levels. High serum ferritin was an independent poor prognostic factor regardless of age, gender, race, treatment modality, all GEP models and most of the ISS series system stages. ISS I&II patients with high ferritin should have a higher risk score, while R-ISS and R2-ISS III patients with normal ferritin should have a lower risk score than in their original scoring systems. Furthermore, ferritin's prognostic role was also explored in a dataset comprising 708 non-transplanted MM patients.

METHODS

We conducted an analysis of individual data from 3446 consecutive patients with multiple myeloma (MM) who received autologous stem cell transplantation (ASCT) therapy. Data analyzed included serum ferritin and other parameters such as gender, race, age, albumin (ALB), beta-2-microglobulin (B2M), lactate dehydrogenase (LDH), triple color interphase fluorescence in-situ hybridization (TriFISH), and gene expression profiling (GEP) scores. Serum ferritin was included in a multivariate Cox regression analysis and was identified as an independent prognostic factor. We further investigated the prognostic effect of ferritin on the different stages of the ISS (including ISS, R-ISS, and R2-ISS) and GEP models. Furthermore, we validated ferritin's prognostic role in a dataset comprising 708 non-transplanted MM patients.

RESULTS

Our study showed that 39.5% of MM patients had high serum ferritin levels. High serum ferritin ($\geq$ 336mg/L for males and $\geq$ 306mg/L for females) had a hazard ratio (1.90, 95%CI: [1.75, 2.07] for overall survival and 1.74, 95%CI: [1.69, 1.81] for progression-free survival. The group with high ferritin levels had a median progression-free survival (PFS) of 40.5 months, whereas the normal ferritin group had a median PFS of 87.5 months. High serum ferritin was an independent poor prognostic factor regardless of age, gender, race, treatment modality, most of the ISS series system stages, and all GEP models. ISS I&II patients with high ferritin should have higher risk score, while R-ISS and R2-ISS III patients with normal ferritin should have lower risk score. And in a 708 non-transplant MM cohort, ferritin's prognostic role was also explored combine with demographic variables and ISS system.

CONCLUSIONS

Serum ferritin is a reliable prognostic factor for patients with MM and, therefore, should be routinely performed. Based on our findings, we recommend incorporation of ferritin into the ISS series models

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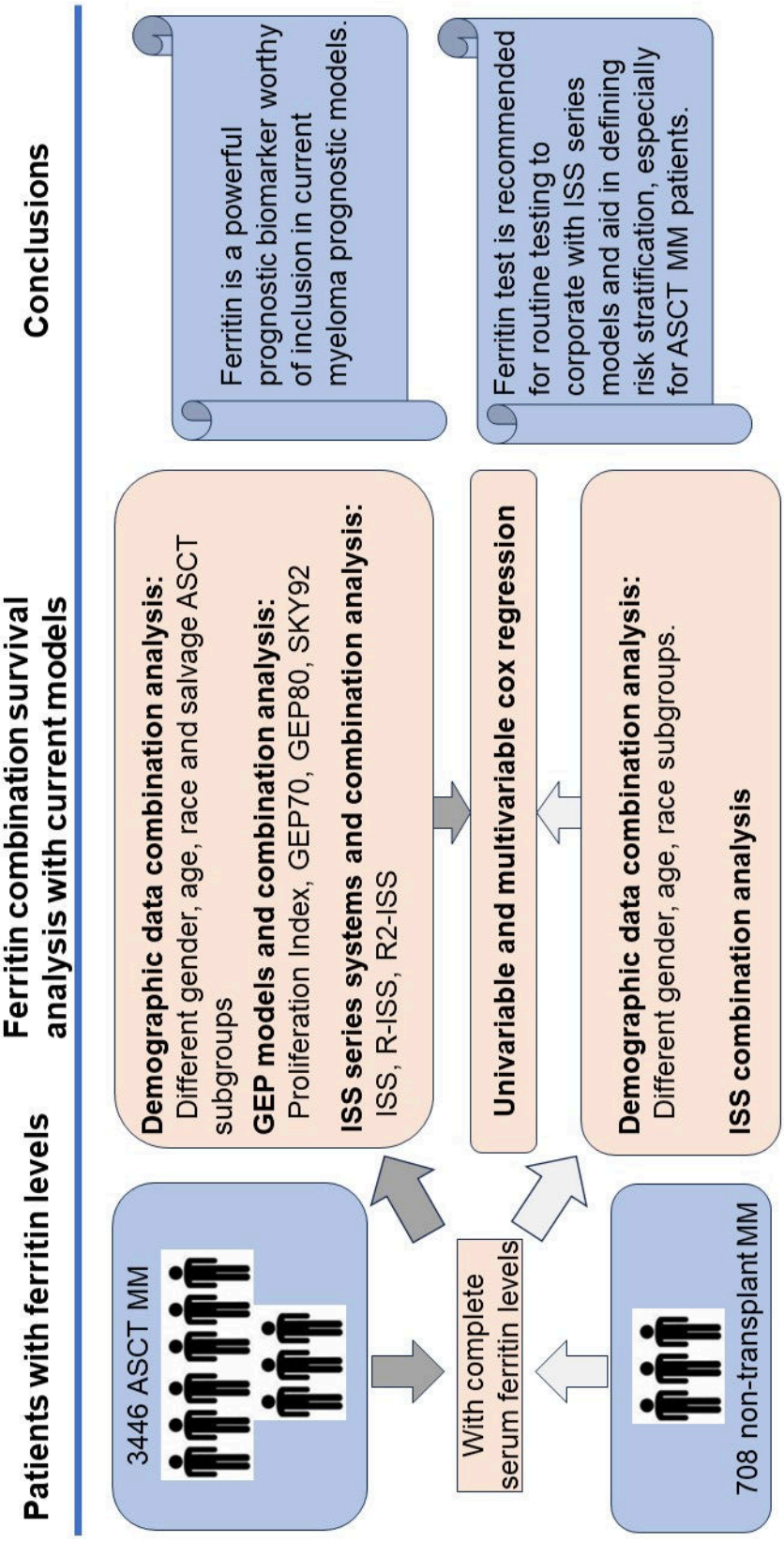

Figure 1