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Low Bone Mineral Content and Lean Body Mass: Independent Risk Factors for Post-Transplant Survival in Patients with Hematological Malignancies Undergoing Allogeneic Hematopoietic Stem Cell Transplantation

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INTRODUCTION

- There is growing evidence about the influence of body composition (BC) on mortality in various patient groups, including patients with hematological malignancies.[1,2]
- Densitometry can prove to be a widely available tool capable of estimating the risk associated with allogeneic stem cell transplantation.

AIM

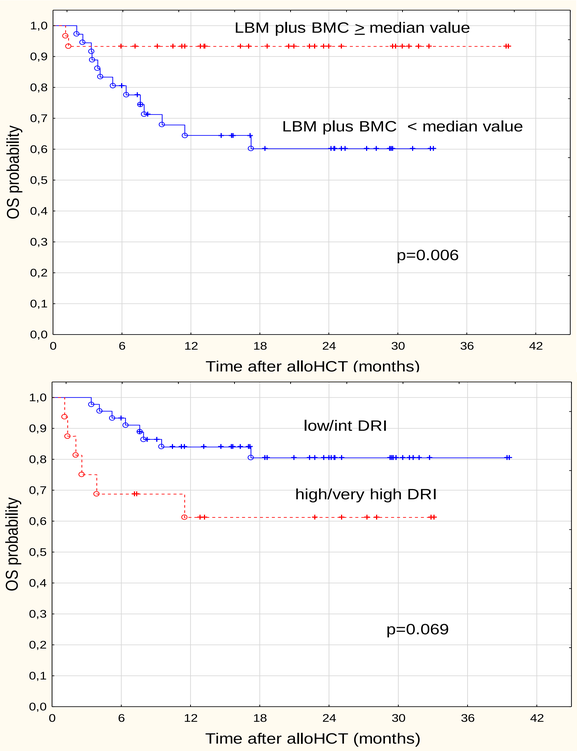
- To assess the impact of BC and bone mineral density (BMD) on the outcome of allogeneic hematopoietic stem cell transplantation (alloHCT).

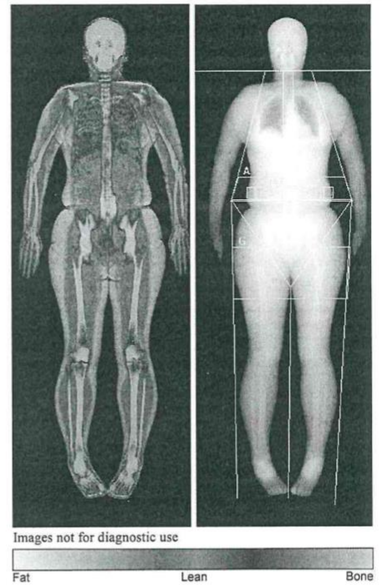
METHOD

- Observational study involving patients with various hematological diseases who underwent alloHCT between 2020 and 2022. Total body BMD and BC, which includes variables such as bone mineral content (BMC) and lean body mass (LBM), were assessed using densitometry with the dual-energy x-ray absorptiometry (DXA) method (Horizon A, Hologic, USA, 2017).
- The study was conducted in a single transplantation center.
- Measured and calculated bone values (BMD expressed in T and Z scores, BMC), body fat values, and fat-free body mass values (including LBM) were obtained.

RESULTS

- ***Study group: 66 patients (34 males and 32 females) with a median age of 56 years (range, 19-69) with various hematological malignancies. matched related donors (n=6), matched unrelated donors (n=51), or haploidentical family donors (n=9) after either myeloablative (n=36) or reduced-intensity conditioning (n=30).***
- ***The median follow-up time was 24 months (range, 8-32), with an overall survival (OS) rate of 75% (95%CI 56-88) at 2 years.***
- ***Significantly worse 2-year OS was found in patients with low LBM plus BMC (below the median value vs ≥ median value (57% vs 94%; p=0.001), and in those transplanted from haploidentical donors (36% vs 81%; p=0.006).***
- ***OS tended to be shorter inpatients with high/very high Disease Risk Index (DRI) vs low/intermediate DRI (60% vs 81%; p=0.069), and in female patients (65% vs 87%; p=0.07). In a multivariate Cox model, low LBM plus BMC remained the only independent risk factor for OS [HR 10.98 (95%CI 1.51-79.67), p=0.018]. Regarding post-transplant complications, infectious complications G1-4 were associated with osteoporosis (4/4 - 100% in osteoporosis group, 22/62 - 35% in no osteoporosis group) (p=0.012), as detected by DXA before the transplant.***





CONCLUSION

- **Our results suggest that low LBM and BMC may serve as new risk factors for worse alloHCT outcomes.**

REFERENCES

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2. Yilmaz, M., Atilla, F.D., Sahin, F. *et al.* The effect of malnutrition on mortality in hospitalized patients with hematologic malignancy. *Support Care Cancer* **28**, 1441–1448 (2020). https://doi.org/10.1007/s00520-019-04952-5

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