

SURVIVAL OUTCOMES IN RELATION TO EBMT RISK SCORE IN PATIENTS WITH HEMATOLOGICAL MALIGNANCIES UNDERGOING ALLOGENEIC HEMATOPOIETIC STEM CELL TRANSPLANTATION IN LOW- AND MIDDLE-INCOME COUNTRIES

Sidra Zafar² , [Maryam Khan¹](#), Raheel Iftikhar¹

¹ Department of Hematology and Stem Cell Transplant, Armed Forces Bone Marrow Transplant Center/National Institute of Blood and Marrow Transplant, Rawalpindi 46000, Pakistan

² Department of Research and Publication, Armed Forces Bone Marrow Transplant Center, Rawalpindi 46000, Pakistan



INTRODUCTION

Allogeneic hematopoietic stem cell transplantation (allo-HSCT) remains the only curative treatment for many hematological malignancies [1]. While the EBMT risk score is a well-established stratification tool [2], its validity in LMICs where late presentation, limited donor availability, and resource constraints prevail remains insufficiently established.

AIM

This study aimed to assess the prognostic utility of the EBMT risk score and compare overall survival across risk score categories in patients undergoing allo-HSCT at a single transplant center in Pakistan.

METHOD

A retrospective analysis of 161 patients with hematological malignancies undergoing allo-HSCT at the Armed Forces Bone Marrow Transplant Centre, Rawalpindi (2021–2025) was conducted using institutional registry data. Overall survival (OS) and disease-free survival (DFS) were estimated using Kaplan-Meier analysis and compared across EBMT risk score categories using SPSS version 27.

CONCLUSIONS

The EBMT risk score serves as a valid prognostic tool for predicting survival in patients undergoing allo-HSCT in a resource-limited setting. However, post-transplant survival in some high-risk patients exceeded expectations, suggesting that allo-HSCT may improve outcomes beyond baseline risk due to improving supportive care and transplant expertise.

RESULTS

Of 157 patients, 108 (68.8%) were male and 49 (31.2%) female, with a median age of 26 (IQR: 19.08) years. Diagnoses included AML (n=58, 36.9%), ALL (n=58, 36.9%), MDS (n=21, 13.4%), and CML (n=20, 12.7%). Allogeneic and haploidentical transplants were performed in 129 (82.2%) and 28 (17.8%) patients, respectively. Pre-transplant OS declined consistently with increasing EBMT score across all subgroups. In AML, OS ranged from 68% (score 0) to 23% (score 5). In CML, OS fell from 76% (score 1) to 39% (score 4). In ALL, OS decreased from 66% (score 0) to 16% (score 5). In MDS, OS declined from 56% (score 0) to 35% (score 4), with no patients at score 5. Post-transplant overall survival (OS) was 64.5%, which similarly reflected EBMT risk stratification. In AML, OS ranged from 100% (score 0) to 50% (score 5), with an overall OS of 75.0% (figure 1). In CML, OS remained favorable at 100% for scores 1 and 2, declining to 66.7% and 75.0% at scores 3 and 4, with an overall OS of 88.9% (figure 2). In ALL, OS ranged from 100% (score 0) to 40.0% (score 4), with an overall OS of 55.1% (figure 3). In MDS, OS declined from 75.0% (score 1) to 0.0% (score 4), with an overall OS of 47.6% (figure 4). The EBMT risk score reliably predicted pre-transplant OS; however, post-transplant survival in some high-risk patients exceeded expectations, suggesting that allo-HSCT may improve outcomes beyond baseline risk.

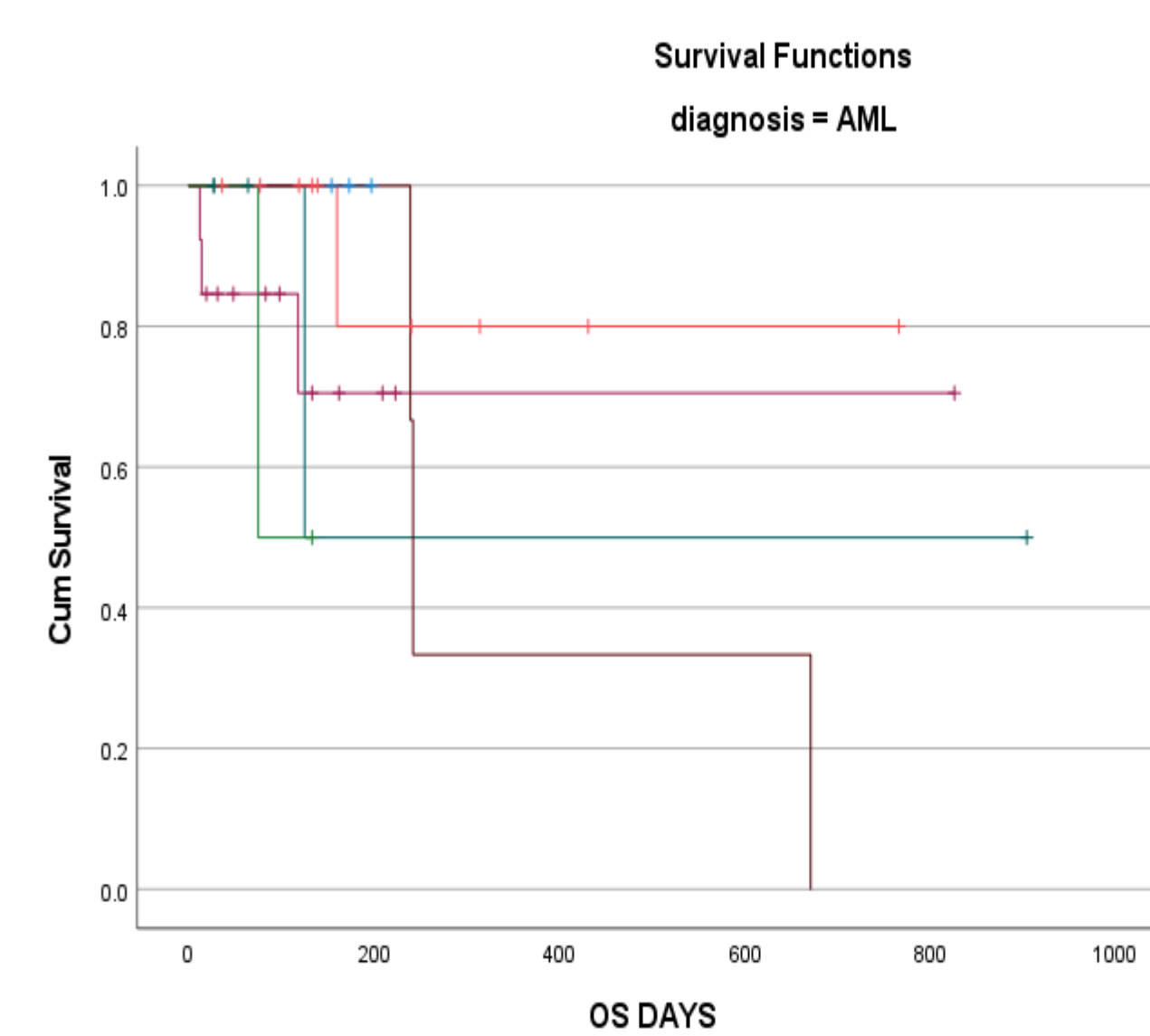


Figure 1. Overall survival according to AML and score.

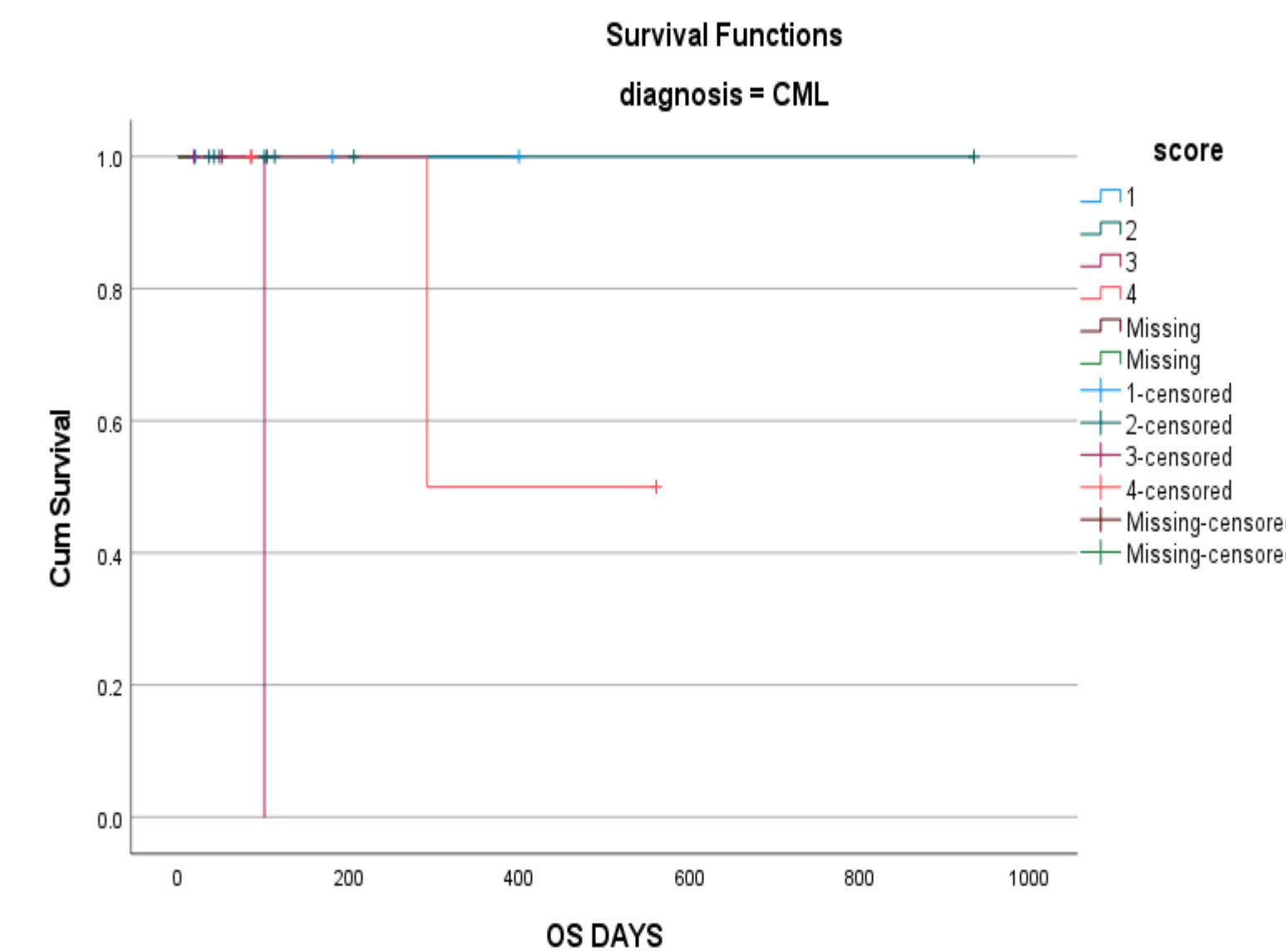


Figure 2. Overall survival according to CML and score.

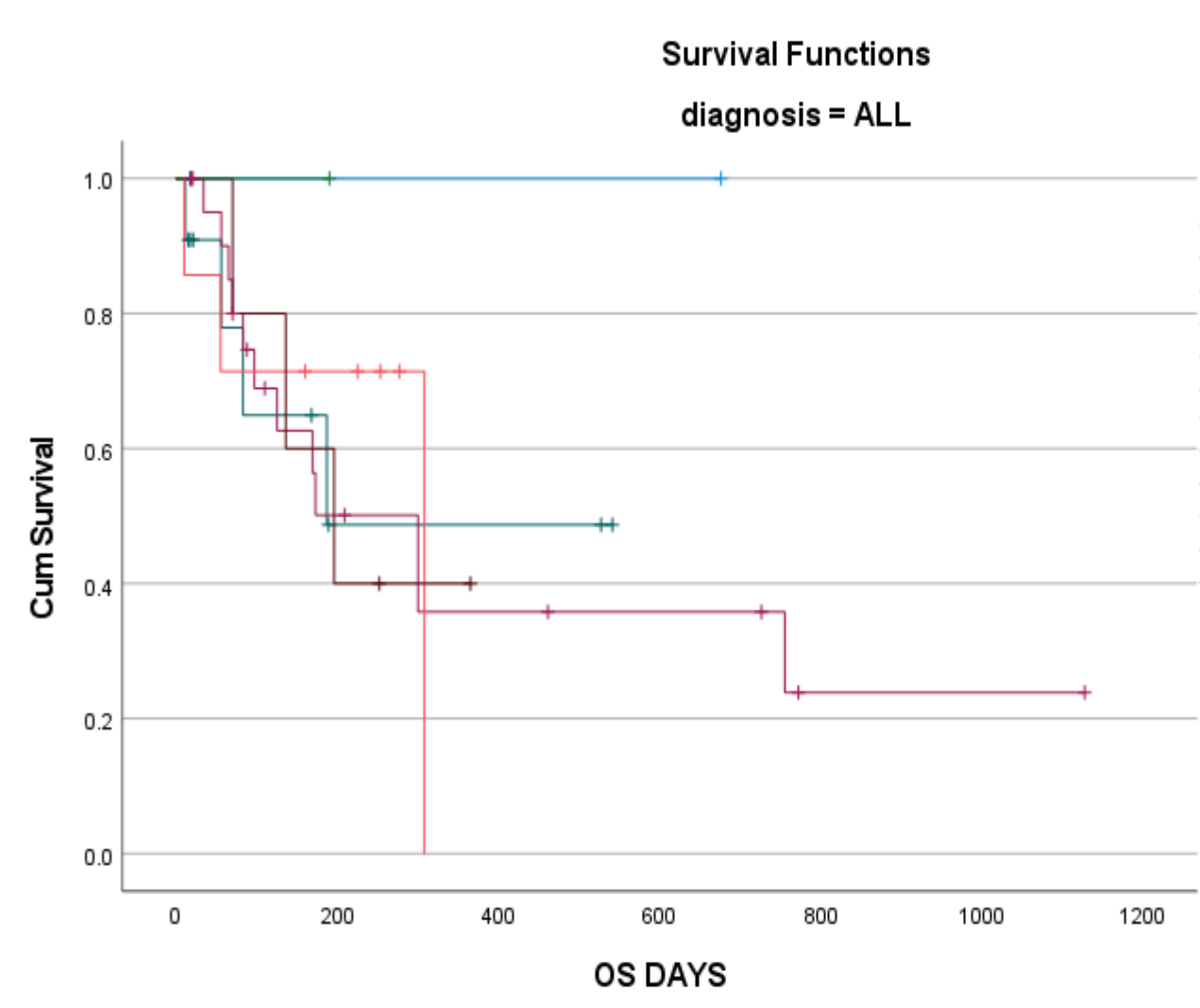


Figure 3. Overall survival according to ALL and score.

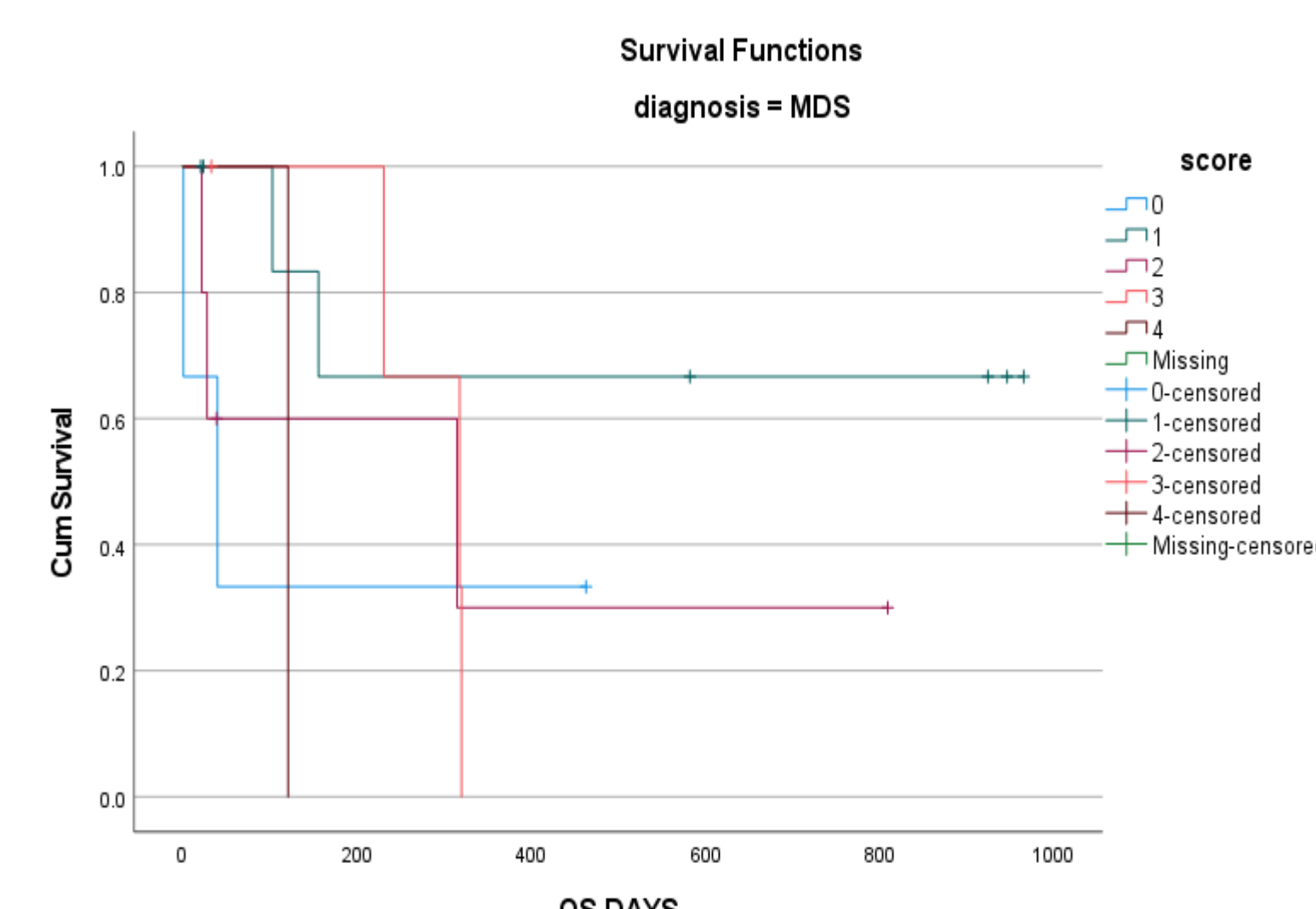


Figure 4. Overall survival according to MDS and score.

ACKNOWLEDGEMENTS

We acknowledge the support of the Armed Forces Bone Marrow Transplant Centre, Rawalpindi, and all patients and staff who contributed to this study.

CONTACT INFORMATION

Dr. Maryam Khan

maryam.khan9882@gmail.com

+92-3366395758

Armed Forces Bone Marrow Transplant Center Rawalpindi 46000, Pakistan

REFERENCES

- Pitombeira, B. S., Paz, A., Pezzi, A., Amorin, B., Valim, V., Laureano, A., ... & Silla, L. (2013). Validation of the EBMT risk score for south Brazilian patients submitted to allogeneic hematopoietic stem cell transplantation. *Bone Marrow Research*, 2013(1), 565824.
- Shouval, R., Bonifazi, F., Fein, J., Boschini, C., Oldani, E., Labopin, M., ... & Nagler, A. (2017). Validation of the acute leukemia-EBMT score for prediction of mortality following allogeneic stem cell transplantation in a multi-center GITMO cohort. *American journal of hematology*, 92(5), 429-434.