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Survival Prediction Models (AIIMS Mantle Cell Lymphoma Overall Survival [AMOS] Score and AIIMS Mantle Cell Lymphoma Event-Free Survival [AMES] Score) for Patients with Mantle Cell Lymphoma from Indian Population

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Background

Mantle Cell Lymphoma (MCL) in south-east Asia specifically among Indian population presents in advanced stage with bulky disease, significant extra-nodal involvement, and poor ECOG PS[1,2]. Indigenous survival prediction models for this part of the world are lacking.

Objective

Development of prediction models for overall survival (OS) and event-free survival (EFS) in Indian MCL patients.

Design

Ambispective clinical data of 90 MCL patients treated at Dr. BRA-IRCH, AIIMS, New Delhi, India between Jan'13-Dec'23 was analysed using STATA version 13.0.

Method

- Clinical and laboratory correlates of OS, EFS with P value < 0.20 in univariate logistic regression analysis were included in multivariate analysis.
- Coefficients of variables from regression models were used to develop the AMOS, AMES scores.
- Optimal cut-off scores were set using receiver operating characteristic (ROC) curve; performance reported using sensitivity, specificity, area under ROC (AUROC).
- P value < 0.05 defined statistical significance.

Multivariate analysis

Table 1: Factors significantly associated with absent OS and EFS at 1 year. (N=90)

Factors	No OS at 1yr	No EFS at 1yr
Age >60yrs (a)	7.8 (1.7-35.9)	5.0 (1.5-17.0)
B-symptoms present (b)	9.4 (1.9-46.2)	3.8 (1.1-13.0)
ECOG PS ≥2 (c)	3.0 (0.8-10.7)	2.5 (0.8-7.6)
Splenomegaly (d)	3.3 (0.8-12.9)	3.9 (1.2-12.4)
LDH ≥ULN (e)	8.5 (1.5-48.6)	3.5 (0.9-14.1)
No rituximab maintenance (f)	38.2 (3.0-494.2)	6.7 (1.4-32.0)
Male sex (g)	5.0 (1.0-26.2)	--

Each variable (a-g) were dichotomised to have a score of 0 (if factors were as mentioned above), else 1.

AMOS score

18.9 (a) + 20.4 (b) + 10.0 (c) + 11.1 (d) + 19.4 (e) + 33.3 (f) + 14.9 (g)

Mean (± SD) AMOS score = 59.8 (± 28.3)

Optimal cut-off by ROC = 48.8 (sensitivity = 86.0%, specificity = 81.0%)

AMES score

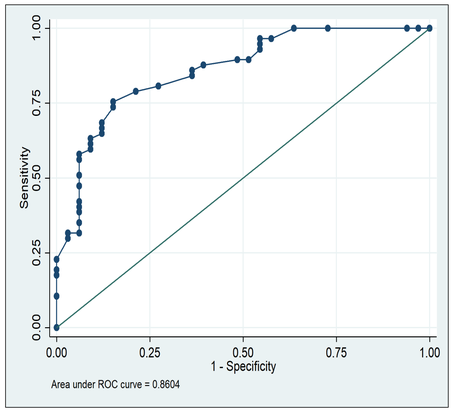
17.8 (a) + 14.9 (b) + 10.0 (c) + 15.0 (d) + 13.8 (e) + 21.1 (f)

Mean (± SD) AMES score = 46.8 (± 22.6)

Optimal cut-off by ROC = 42.2 (sensitivity = 75.0%, specificity = 85.0%)

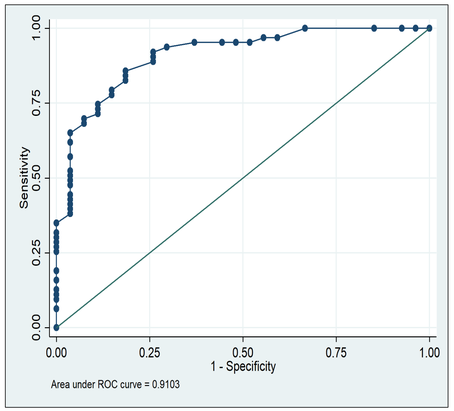
Model performance

Image 1: ROC curve for AMOS score.



AUROC for AMOS score = 0.86

Image 2: ROC curve for AMES score.



AUROC for AMES score = 0.91

Discussion

AMOS and AMES are survival prediction models for Indian MCL patients with good statistical performance. However, further prospective validation studies are needed for implementation of these models in routine clinical practice.

Conclusion

AMOS and AMES are new indigenous overall and event-free survival predictive scores respectively in MCL patients with reasonably high predictive capacity.

References

1. Das ChK, Gogia A, Kumar L et al. Mantle Cell Lymphoma: A North Indian Tertiary Care Centre Experience. Asian Pac J Cancer Prev. 2016 Oct 1;17(10):4583-4586.
2. Gujral S, Agarwal A, Gota V, et al. A clinicopathologic study of mantle cell lymphoma in a single center study in India. Indian J Pathol Microbiol. 2008 Jul-Sep;51(3):315-22.