

Biologic factors of breast cancer and DFS



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Introduction

Novel molecular characterization of breast cancer with cellular markers has allowed a new classification that offers prognostic value, with predictive categories of disease aggressiveness.(1) **Biological factors have predictive and prognostic value in breast cancer patients.**(2)

Bioscore staging model was proposed by MD Anderson team. In this model **incorporation of biologic factors into AJCC staging system had a prognostic impact on patients survival.**(3)

Our work evaluates the prognostic value of the bioscore among non-metastatic female breast cancer patients concerning disease-free survival (DFS).

Methods

- ❖ We reviewed the clinical data of 317 female patients with non-metastatic surgically treated breast cancer from January 2015 to December 2018 presented at Clinical Oncology Department, Assiut University Hospital, Egypt.
- ❖ The biological variables include; pathologic stage (PS), T stage (T), nodal stage (N), grade (G), estrogen receptor (ER), progesterone receptors (PR), and human epidermal growth factor receptor (HER2) status.
- ❖ Univariate & two multivariate analyses were performed to identify variables associated with disease-free survival (DFS).
- ❖ Bioscore calculation by giving a score of 0-4 for each factor according to the hazard ratio magnitude.
- ❖ Multiple staging system models were built for significant factors in both univariate and multivariate analyses: PS, PS + G, PS + G + E, T + N, T + N + G, T + N + G + E.
- ❖ The first one used the PS, which takes into account T and N stage as a variable while the second included T and N stages as separate variables.
- ❖ Model performance was quantified using Harrell's concordance index (C-index) and the Akaike Information Criterion (AIC) was used to compare model fits.

Results

- **Significant factors in the univariate analysis:** PS3, T2, T3, T4, N3, G2, G3, ER -ve, PR -ve, and HER2 -ve with Hazard Ratio (HR); 4.77, 2.52, 2.80, 5.59, 2.74, 6.92, 16.80, 3.08, 2.11, 0.53 respectively with significant P value (< 0.05).
- **Significant factors in the first multivariate model:** PS3, G3, and ER -ve.
- **Significant factors in the second multivariate model:** T2, T4, N3, G3, and ER -ve.
- **Two sets of models were built to determine the utility of combining variables.**
- **Models incorporating G and E status had the highest C-index (0.72) for (T+N + G + ER) in comparison with (0.69) for (PS+ G + ER) and the lowest AIC (953.01) for (T + N + G + E) and (966.9) for (PS + G + E) as in fig.1,2.**

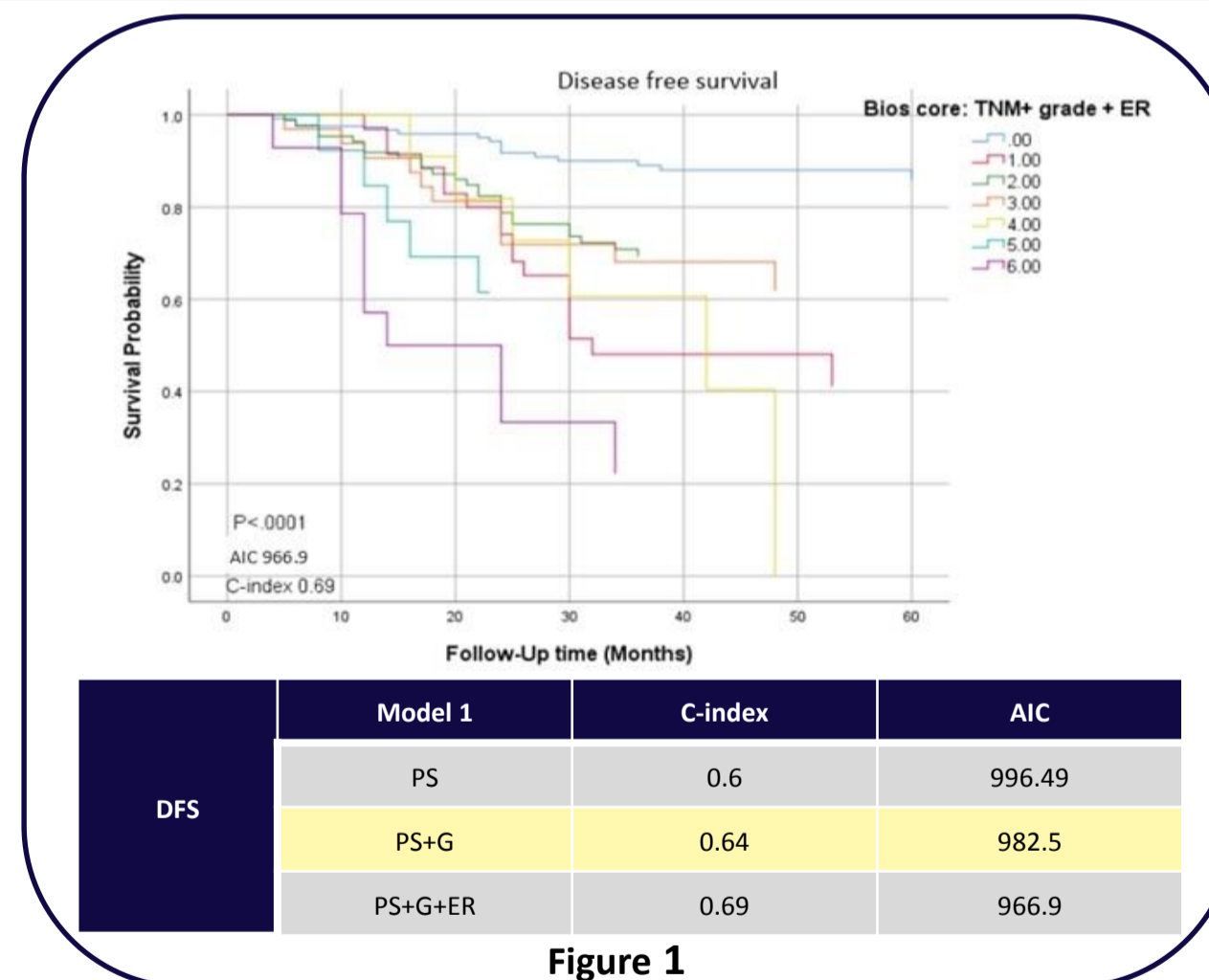


Figure 1

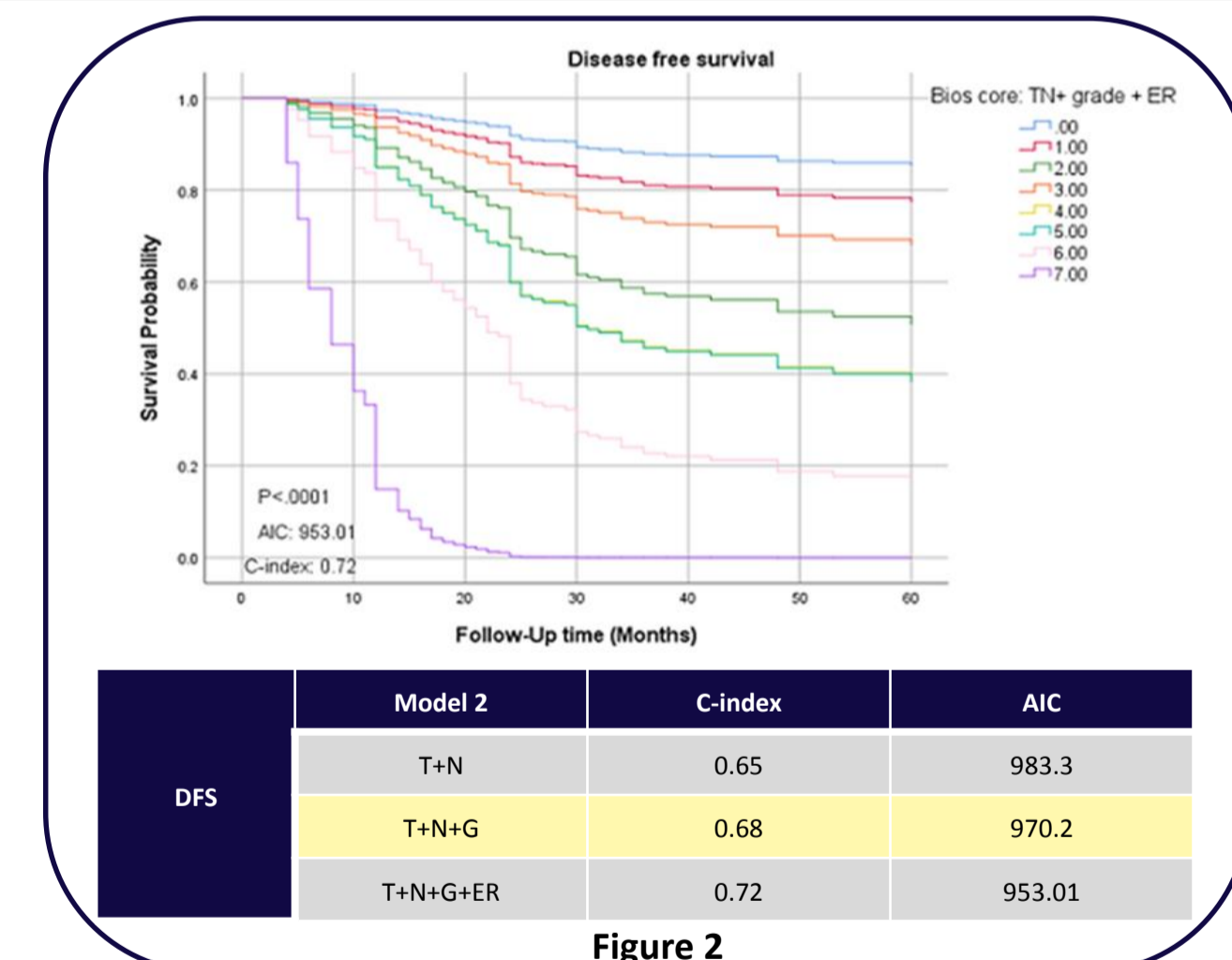


Figure 2

Conclusions

- >> **Bioscore provides more optimistic prognostic stratification than the anatomic staging alone as regards DFS.**
- >> **It helps clinicians to provide patients with more personalized treatment options.**

References

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