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Prognostic factors in different stages of breast cancer using illness-death model

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Background: Breast cancer is the most common cancer among women. Considering the importance of prognostic factors' effect on survival, the main object of present study was evaluation the correlated factors with survival in different stages of breast cancer.

Materials and Methods: In this study**,** 518 breast cancer patients treated in Pars and Fayyazbakhsh hospitals in 2006-2009 were retrospectively followed up. Data were recorded based on the last status of disease (metastasis or death) in 2012.The effect of prognostic factors on outcomes indifferent stages of the disease were demonstrated by an illness-death model and their relation to death was analyzed by R software.

Results: The mean age of the patients was 48.8 years (±10.8). The mean follow-up time was 5.5 years. Number of involved lymph nodes were statistically significant in death and metastasis ($p<0.001$) and it was found that individuals with the higher number of involved nodes had higher risk of death and metastasis in all transitions. In addition, metastatic patients with higher tumor grade, negative HER-2 and larger tumor size showed higher HR of death ($p<0.05$). In this study, ER and PR were not significant in death or metastasis. The age of patients was significant in death ($p=0.01$).

Conclusion: This study showed that tumor grade, HER-2 status and tumor size in breast cancer patients with metastasis have important roles in disease survival. Patients with more involved lymph nodes and larger tumor size, have higher risk of metastasis and death.

Keywords: Prognostic factors, Illness-death model, Breast Cancer, Survival analysis.

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