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Hemoglobin and bone metastasis risk in breast cancer: a prognostic perspective

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Introduction: Bone is the most common site of breast cancer metastasis, but prognostic factors remain controversial. **Objective:** This study examined the association between hemoglobin (Hb) levels and bone metastasis (BM) risk. **Methods:** This retrospective study evaluated 260 breast cancer patients, between 2021–2023, analyzing age, clinical stage (IIIa, IIIb, IIIc), estrogen receptor (ER), progesterone receptor (PR), human epidermal growth factor receptor-type 2 (HER2) status, and Hb levels. Groups were divided into those with and without BM. Treatments included surgery, chemotherapy, radiotherapy, and hormonal blockade for ER/PR-positive cases. HER2 3+ patients received trastuzumab. Statistical analyses included t-tests and chi-square tests. The study was approved by the research ethics committee. **Results:** The mean age was 61.3 years, standard deviation ±9.7, and mean Hb was 12.3±1.17 g/dL. ER was positive in 71.5% of patients, PR in 59.6%, and HER2 in 25.8%. Clinical stages IIIa, IIIb, and IIIc were observed in 50.8%, 33.5%, and 15.7%, respectively. BM was identified in 17.3% of cases. Among stage IIIa, IIIb, and IIIc, BM occurred in 22.7%, 10.3%, and 14.6%, respectively ($p>0.067$). BM was found in 16.1% of ER-positive *vs.* 20.3% of ER-negative patients ($p>0.468$). PR and HER2 status showed no significant relationship with BM ($p>0.508$; $p>0.708$). However, Hb levels were significantly lower in BM patients (11.7 g/dL) than in those without (12.5 g/dL; $p<0.0001$). **Conclusion:** Lower Hb levels may be linked to higher BM risk in breast cancer patients and could serve as a prognostic marker, requiring further investigation.

Keywords: hemoglobin; breast neoplasms; neoplasm metastasis; radiotherapy.