

Accepted Manuscript

Predicting Brain metastasis in breast cancer patients: Stage versus biology

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PII: S1526-8209(17)30235-5

DOI: [10.1016/j.clbc.2017.08.004](https://doi.org/10.1016/j.clbc.2017.08.004)

Reference: CLBC 665

To appear in: *Clinical Breast Cancer*

Received Date: 18 April 2017

Revised Date: 15 July 2017

Accepted Date: 10 August 2017

Please cite this article as: Azim HA, Abdel-Malek R, Kassem L, Predicting Brain metastasis in breast cancer patients: Stage versus biology, *Clinical Breast Cancer* (2017), doi: 10.1016/j.clbc.2017.08.004.

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Predicting Brain metastasis in breast cancer patients:

Stage versus biology

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Background: Brain metastasis (BM) is a life threatening event in breast cancer patients. Identifying patients at a high risk for BM can help to adopt screening programs and test preventive interventions. We tried to identify the incidence of BM in different stages and subtypes of breast cancer.

Methods: We reviewed the clinical records of 2193 consecutive breast cancer patients presented between January 1999 and December 2010. We explored the incidence of BM in relation to standard clinico-pathological factors, and determined the cumulative risk of BM according to the disease stage and phenotype. **Results:** Of the 2193 included women, 160 patients (7.3%) developed BM at median follow up of 5.8 years. Age less than 60 years ($p=0.015$), larger tumors ($p=0.004$), LN positivity ($p<0.001$), high tumor grade ($p=0.012$) and HER2 positivity ($p<0.001$) were associated with higher incidence of BM in the whole population. In patients presenting with loco-regional disease, 3 factors independently predicted BM: large tumors (HR=3.60; 95%CI: 1.54-8.38; $p=0.003$), axillary LN metastasis (HR=4.03; 95%CI: 1.91-8.52; $p<0.001$) and HER2-positivity (HR=1.89; 95%CI: 1.0-3.41; $p=0.049$). A Brain Relapse Index was formulated using those 3 factors,

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