

Prognostic Value of Lymphangiogenesis and Lymphovascular Invasion in Invasive Breast Cancer

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Abstract

Objective:

The aim of this study was to investigate the prognostic relevance of lymphangiogenesis and lymphovascular invasion in a large cohort of breast cancer patients.

Introduction:

Invasion of tumor cells into blood and lymphatic vessels is one of the critical steps for metastasis. The presence or absence of lymph node metastasis is one of the main decision criteria for further therapy. One shortcoming of previous morphologic studies was the lack of specific markers that could exact discriminate between blood and lymphatic vessels. The aim of this study was to evaluate the prognostic relevance of lymphangiogenesis and lymphovascular invasion in breast cancer patients.

Methods:

We investigated 374 tissue specimens of patients suffering from invasive breast cancer by immunostaining for the lymphatic endothelial specific marker podoplanin. Lymphangiogenesis, quantified by evaluating the lymphatic microvessels density (LMVD), and lymphovascular invasion (LVI) were correlated with various clinical parameters and prognostic relevance.

Results:

LMVD correlated significantly with LVI ($P = 0.001$). LVI was associated significantly with a higher risk for developing lymph-node metastasis ($P = 0.004$). Calculating the prognostic

relevance, LVI presented as an independent prognostic parameter for disease free as well as overall survival ($P = 0.001$, and $P = 0.001$, respectively).

Conclusion:

Our data provide evidence that the biologic system of lymphangiogenesis constitutes a potential new target for development of anti-breast cancer therapeutic concepts. Our results further suggest that young, premenopausal patients with low differentiated breast tumors and high LMVD and LVI would, in particular, benefit from lymphangiogenesis-associated therapeutic strategies.