Sortilin expression is an independent prognostic factor for disease recurrence in node-negative premenopausal breast cancer

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Introduction

The receptor sortilin is a membrane and cytoplasmic protein mostly expressed in the central nervous system. Recent data nevertheless suggest that sortilin is expressed in cancer cells and potentially linked to tumour aggressive features and progression. Within a larger project we are delineating the specific tumour biological functions for sortilin in breast cancer with the aim to develop novel targeted therapies for subgroups of breast cancer. In order to better define the clinical relevance for sortilin expression in breast cancer we evaluated sortilin in a well-characterized randomized cohort of premenopausal breast cancer (SB22) with long-term patient follow-up.

Methods

Tissue microarrays of in total 429 invasive breast cancer samples were analyzed for sortilin expression and potential links to clinico-pathological data and available tumour biological parameters evaluated were assessed. Scoring of tumour samples was performed under supervision of a pathologist without knowledge of pathologic and clinical data.

Results

Sortilin was highly expressed in 15% of the analysed cancer samples and was further significantly associated with ER- (p=0.001) and PR-positivity (p=0.001). Interestingly, sortilin expression was significantly associated with disease recurrence in ER-negative breast cancer and specifically in lymph-node negative breast cancer.

Sortilin was further together with hif-expression independent significant factor (p=0.004 and 0.018 respectively) and for disease recurrence in lymph-node negative patients using a multivariate Cox analysis including tumour size, grade, ER, sortilin and hif.

Conclusions

The presented data indicate that sortilin expression in premenopausal breast cancer is associated with the expression of ER but in general defines subgroups of lymph-node negative patients having increased risk of disease recurrence. The data support that sortilin is a relevant tumour biological target linked to tumour aggressive features in premenopausal breast cancer.

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