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HER2-POSITIVE BREAST CANCER PATIENTS: CORRELATION BETWEEN MAMMOGRAPHIC AND PATHOLOGICAL FINDINGS

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Human epidermal growth factor receptor 2 (HER2)-positive breast cancers represent a highly aggressive breast cancer subtype and are associated with a worse prognosis. This study was designed to investigate the mammography finding of HER2-positive breast cancer and to compare the results with the characteristics of HER2-negative breast cancer patients. From January 2010 to October 2011, mammography findings of 65 patients with pathologically confirmed HER2-positive breast cancers ($n = 22$) or HER2-negative breast cancers ($n = 43$) were retrospectively reviewed. The authors also reviewed pathological reports for information on the histological type and differentiation grade. Among the two types of breast cancer patients, estrogen receptor-negative/PR-negative/HER2-positive breast cancer patients most commonly had associated calcifications (18 of 22) on mammography. On mammography, cases with a cluster of calcifications usually were presented as pleomorphic calcifications (12 of 20) and branching calcifications (4 of 20). Patients with HER2-positive breast cancers showed a histological grade II. HER2-positive breast cancer patients usually had ductal invasive carcinoma (17 of 22). Moreover, postmenopausal patients showed a significantly higher frequency of HER2-positive tumours. Our results suggest that the imaging findings might be useful in diagnosing HER2-positive breast cancer patients.

INTRODUCTION

Determination of estrogen receptor (ER) and human epidermal growth factor receptor 2 (HER2) positivity of invasive breast cancers is useful as a prognostic and predictive factor and has become standard practice in the management of breast cancer as ER and HER2 positivity predict response to endocrine therapy or targeted therapy with monoclonal antibodies directed against HER2[(1)]. Recently, it has been shown that the HER2 subtype, characterised by positivity for HER2, is associated with aggressive histological features, poor prognosis, unresponsiveness to usual therapies and shorter survival[(2)].

Mammography is the preferred examination for breast cancer, especially in women older than 40 y, the age group with the highest incidence risk[(3)]. Typical mammographic findings from breast cancer screening mammograms would include asymmetrical breast tissue, asymmetric density, architectural distortion, mass, microcalcifications, interval changes compared with previous films, adenopathy and other miscellaneous findings. If it is possible to predict the presence of HER2 breast cancer subtype based on mammography feature, this information will be beneficial for both pre-treatment planning and prognosis and will add to the understanding of the biological behaviour of this disease entity.

HER2 is an established molecular prognostic marker in breast cancer and is often targeted with therapeutic intention in both localised and metastatic breast cancer[(2, 3)]. The authors investigated whether image features (mass, calcification clusters) may be associated with HER2 status. The data indicate an influence of tumour types on correlation, a finding that could be of diagnostic and therapeutic significance. These results provide insights into the biological processes in breast cancer defined by association of HER2 and mammographic features and could be of use in defining novel therapeutic and management strategies.

MATERIALS AND METHODS

The authors enrolled in the study 65 women diagnosed with breast cancer at the Institute of Oncology and Radiology of Serbia, for whom diagnostic mammograms were available at the diagnostic department. The study protocol was approved by the Institutional Review Board of the Institute of Oncology and Radiology of Serbia.

Image analysis

From January 2010 to October 2011, mammography findings of 65 patients with pathologically confirmed HER2-positive breast cancers ($n = 22$) or HER2-negative breast cancers ($n = 43$) were retrospectively reviewed. Two experienced breast imaging radiologists reviewed all mammograms without the knowledge of