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Risk Factors for Positive Margins in Conservative Surgery for Breast Cancer After Neoadjuvant Chemotherapy☆

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ABSTRACT

Background: Breast conservative surgery after neoadjuvant chemotherapy intends to remove any residual tumor with negative margins. The purpose of this study was to analyze the preoperative clinical-pathological factors influencing the margin status after conservative surgery in breast cancer patients receiving neoadjuvant chemotherapy.

Methods: A retrospective study of 91 breast cancer patients undergoing neoadjuvant chemotherapy (92 breast lesions) during the period 2006–2013. A Cox regression analysis to identify baseline tumor characteristics associated with positive margins after breast conservative surgery was performed.

Results: Of all cases, 71 tumors were initially treated with conservative surgery after neoadjuvant chemotherapy. Pathologic exam revealed positive margins in 16 of the 71 cases (22.5%). The incidence of positive margins was significantly higher in cancers with initial size >5 cm (P=.021), in cancers with low tumor grade (P=.031), and in patients with hormone receptor-positive cancer (P=.006). After a median follow-up of 45.2 months, 7 patients of the 71 treated with conservative surgery had disease recurrence (9.8%). There was no significant difference in terms of disease-free survival according to the margin status (P=.596).

Conclusions: A baseline tumor size >5 cm, low tumor grade and hormone receptor-positive status increase the risk for surgical margin involvement in breast conservative surgery after neoadjuvant chemotherapy.

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Factores de riesgo de afectación de los márgenes quirúrgicos en la cirugía conservadora del cáncer de mama tras quimioterapia neoadyuvante

Palabras clave:
Cáncer de mama
Quimioterapia neoadyuvante
Cirugía conservadora
Márgenes positivos

RESUMEN

Introducción: La cirugía conservadora de mama tras la quimioterapia neoadyuvante pretende resecar cualquier tumor residual con unos márgenes negativos. El objetivo de este estudio fue analizar los factores clínico-patológicos preoperatorios que influyen sobre el estado de los márgenes de resección tras la cirugía conservadora en pacientes con cáncer de mama tratadas con quimioterapia neoadyuvante.

Métodos: Estudio retrospectivo de 91 pacientes con cáncer de mama (92 tumores) tratadas con quimioterapia neoadyuvante durante el periodo 2006–2013. Se realizó un análisis de regresión de Cox para identificar las características basales del tumor asociadas con la afectación de los márgenes de resección tras cirugía conservadora de la mama.

Resultados: Del total de casos del estudio, 71 tumores se trataron inicialmente mediante cirugía conservadora tras la quimioterapia neoadyuvante. El examen patológico reveló afectación de márgenes en 16 de los 71 casos (22,5%). Se observó una mayor incidencia de márgenes positivos en los tumores con un tamaño inicial superior a 5 cm (p = 0,021), en los tumores de bajo grado histológico (p = 0,031) y en los tumores con estatus positivo de los receptores hormonales (p = 0,006). Tras un seguimiento medio de 45,2 meses, 7 de las 71 pacientes tratadas con cirugía conservadora presentaron recidiva de la enfermedad (9,8%). No se observaron diferencias estadísticamente significativas en la supervivencia libre de enfermedad según el estado de los márgenes quirúrgicos (p = 0,596).

Conclusiones: Un tamaño tumoral basal superior a 5 cm, el bajo grado tumoral y el estatus positivo de los receptores hormonales incrementan el riesgo para la afectación de los márgenes quirúrgicos en la cirugía conservadora de mama tras quimioterapia neoadyuvante.

Introduction

Breast-conserving surgery with disease-free margins in breast cancer is equivalent to mastectomy in terms of local control and survival,[1] while presenting the advantage of a better psychosocial result.[2]

Neoadjuvant chemotherapy (NCT) is able to increase the survival rates of breast-conserving surgery without a significant increase in the percentages of local recurrence.[3–5] Furthermore, complete pathologic response to treatment improves patient prognosis.[6]

The state of the resection margins after conservative surgery is one of the most important predictive factors for the risk of locoregional recurrence in breast cancer.[7,8] Certain tumor characteristics can increase the risk for reintervention as a consequence of involved surgical margins.

The objective of this study was to identify preoperative clinical-pathological risk factors for the involvement of surgical margins after conservative surgery in patients with breast cancer treated with NCT.

Methods

Study Population

Between October 2006 and June 2013, 91 consecutive patients with histopathological diagnosis of invasive breast cancer were treated with NCT at a single hospital. The initial diagnosis was based on mammogram and ultrasound studies, and histopathological confirmation was established by ultrasound-guided fine-needle aspiration of the lesions observed and by stereotaxis in the case of microcalcifications.

The criteria for neoadjuvant treatment were: clinical presentation in stage IIB-III, unfavorable tumor-to-breast volume ratio, or molecular profile with a high probability for complete pathologic response. Patients with distant metastasis at the time of diagnosis were excluded from the study. We conducted a retrospective review of the clinical and pathological data of the series. The study was approved by the Research Ethics Committee of our Healthcare Area (n 2015/059).

Immunohistochemistry Study

Based on the results from the initial diagnostic biopsy, the tumors were classified into 5 subtypes according to immunohistochemistry characteristics: luminal A, luminal B/HER2−, luminal B/HER2+, HER2+ and triple negative. The HER2 tumors with a score of 3+ were considered positive. If the score was 2+, the fluorescent in situ hybridization technique was used to determine whether there was amplification of the HER2 gene and to confirm or disprove positivity. The samples that did not express HER2 or had a score 1+ were considered HER2−. The cut-off point for ki-67 was set at 14% to determine whether the cell proliferation rate was high (≥14%) or low (<14%).