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Original Article

Axillary Radiotherapy in Conservative Surgery for Early-Stage Breast Cancer (Stage I and II)☆

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ABSTRACT

Introduction: Several clinical studies analyze axillary treatment in women with early-stage breast cancer because of changes in the indication for axillary lymph node dissection. The aim of the study is to analyze the impact of axillary radiotherapy in disease-free and overall survival in women with early breast cancer treated with lumpectomy.

Methods: Retrospective study in women with initial stages of breast carcinoma treated by lumpectomy. A comparative analysis of high-risk women with axillary lymph node involvement who received axillary radiotherapy with the group of women with low risk without radiotherapy was performed. Logistic regression was used to determine factors influencing survival and lymphedema onset.

Results: A total of 541 women were included in the study: 384 patients (71%) without axillary lymph node involvement and 157 women (29%) with 1-3 axillary lymph node involvement. Patients with axillary radiotherapy had a higher number of metastatic lymph node compared to non-irradiated (1.6 ± 0.7 vs 1.4 ± 0.6, P=.02). The group of women with axillary lymph node involvement and radiotherapy showed an overall and disease-free survival at 10 years similar to that obtained in patients without irradiation (89.7% and 77.2%, respectively). 3 lymph nodes involved multiplied by more than 7 times the risk of death (HR = 7.20; 95% CI: 1.36 to 38.12). The multivariate analysis showed axillary lymph node dissection as the only variable associated with the development of lymphedema.

Conclusion: The incidence of axillary relapse on stage I and II breast cancer is rare. In these patients axillary radiotherapy does not improve overall survival, but contributes to regional control in those patients with risk factors.

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Radioterapia axilar en la cirugía conservadora del cáncer de mama en estadio temprano (estadio I y II)

Palabras clave:
Cáncer de mama
Linfadenectomía axilar
Radioterapia axilar
Recidiva axilar
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RESUMEN

Introducción: Diversos estudios clínicos analizan el tratamiento axilar en el cáncer de mama temprano debido a los cambios actuales en la indicación de la linfadenectomía axilar. El objetivo de este estudio fue analizar el impacto de la radioterapia axilar en la supervivencia global y libre de enfermedad en mujeres con un carcinoma de mama en estadio inicial tratadas mediante cirugía conservadora.

Métodos: Estudio retrospectivo en mujeres con un carcinoma infiltrante de mama en estadios iniciales tratadas mediante cirugía conservadora. Análisis comparativo de las mujeres con afectación ganglionar y factores de riesgo asociados que recibieron radioterapia axilar frente a un grupo con afectación ganglionar de bajo riesgo sin tratamiento radioterápico. Se utilizó una regresión logística para determinar los factores que influían en la supervivencia y en la aparición de linfedema.

Resultados: Se incluyó a 541 mujeres, 384 (71%) sin afectación de ganglios linfáticos axilares y 157 (29%) con afectación de 1-3 ganglios axilares. Las pacientes con radioterapia axilar tenían un mayor número de ganglios metastásicos respecto a las no irradiadas ($1,6 \pm 0,7$ vs. $1,4 \pm 0,6$; $p = 0,02$). El grupo de mujeres con afectación ganglionar y radioterapia axilar tuvo una supervivencia global y libre de enfermedad a los 10 años similar a las pacientes sin irradiación de la axila (89,7 y 77,2%, respectivamente). La afectación de 3 ganglios incrementó 7 veces el riesgo de fallecer (HR = 7,20; IC 95%: 1,36-38,12). En el estudio multivariante, la linfadenectomía axilar fue el único factor de riesgo independiente de aparición de linfedema (HR = 22,22; IC 95%: 4,71-105,59; $p < 0,001$).

Conclusión: La recidiva axilar en el cáncer de mama en estadios I y II es un evento poco frecuente. En las enfermas con afectación axilar y factores de riesgo asociados, la radioterapia regional contribuye al control locorregional de la enfermedad con igual supervivencia global.

Introduction

Breast-conserving surgery in breast cancer is based on the use of radiotherapy as adjuvant therapy to surgery. Several studies have demonstrated that local breast resection in association with radiation guarantees a survival rate similar to mastectomy,[1–3] although the actual repercussion of its application in the axilla is unknown. Radiation of the thoracic wall and axilla in female patients after mastectomy has demonstrated a benefit in disease-free periods, especially in women with more than 3 affected lymph nodes.[4,5] Currently, there is controversy about the indication for axillary radiotherapy in patients treated with breast-conserving surgery and involvement of 1–3 axillary lymph nodes (N1) due to 2 circumstances. First of all is the change in the indication for axillary lymph node dissection (ALND) in women with metastatic involvement of the sentinel lymph node after the publication of clinical trial ACOSOG Z0011.[6] This circumstance has generated a group of N1 patients without ALND who receive breast radiotherapy, whose tangential fields include axillary level Iand in whom there is debate about whether radiotherapy is needed at all axillary levels. The second is the publication of the Canadian study MA.20,[7] which demonstrated a reduction of axillary recurrences in patients treated with lumpectomy and axillary radiotherapy, without any repercussions in overall survival. Although international clinical guidelines[8] accept the criteria of trial Z0011 in breast-conserving surgery, there continues to be a controversy of whether this patient group's treatment should be complemented with axillary radiotherapy.

The objective of this study was to analyze the impact of axillary radiotherapy on overall and disease-free survival of women with initial-stage breast cancer treated with breast-conserving surgery. Likewise, potential risk factors for lymphedema were analyzed in this group of patients.

Methods

Patients

This retrospective study was done between October 1999 and July 2015 and included women with invasive breast cancer in initial stages treated with breast-conserving surgery and axillary staging by sentinel lymph node biopsy (SLNB) or ALND. Tumors in initial stages were defined as those in stages I and II according to the 7th edition of the TNM Classification of the American Joint Committee on Cancer,[9] which corresponds with tumors less than 5 cm in size with no axillary involvement or with involvement of 1–3 lymph nodes.

Excluded from the study were those patients with involvement of 4 or more axillary lymph nodes, T3-T4 tumors, distant metastasis upon diagnosis, in situ carcinoma or a metachronous carcinoma in the same breast. Likewise, we excluded patients treated with primary systemic chemotherapy,