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Original article

Secondary Node Analysis as an Indicator for Axillary Lymphadenectomy in Breast Cancer Patients[☆]

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ABSTRACT

Introduction: Currently, there is no agreement regarding if it would be necessary to perform an axillary lymph node dissection (ALND) in patients who have macrometastases in the sentinel lymph node (SLN). We studied the utility of the secondary node analysis (SN), defined as the following node after the SLN in an anatomical and lymphatic pathway, as a sign of malignant axillary involvement.

Methods: An observational, retrospective and multicenter study was designed to assess the utility of the SN as a sign of axillary involvement. Among 2273 patients with breast cancer, a valid sample of 283 was obtained representing those who had the SN studied. Main endpoints of our study were: the SLN, the SN and the ALND histological pattern. Sensitivity, specificity and precision of the test were also calculated.

Results: SN test, in cases with positive SLN, has a sensitivity of 61.1%, a specificity of 78.7%, a positive predictive value of 45.8% and a negative predictive value of 87.3% with a precision of 74.7%.

Conclusion: The study of the SN together with the technique of the SLN allows a more precise staging of the axillary involvement, in patients with breast cancer, than just the SLN technique.

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Ganglio secundario como indicador de linfadenectomía axilar en pacientes afectas de cáncer de mama

RESUMEN

Palabras clave:
Cáncer de mama
Ganglio centinela
Metástasis linfáticas

Introducción: En la actualidad no existe consenso en cuanto a la necesidad de realizar linfadenectomía axilar (LA) en los casos en que se detectan macrometástasis en el ganglio centinela (GC). En este estudio se presenta la utilidad del ganglio secundario (GS), una nueva técnica diagnóstica, como factor predictor de afectación axilar.

Métodos: Se diseñó un estudio observacional, retrospectivo y multicéntrico con el objetivo de validar la técnica del GS, entendido como tal el siguiente ganglio a nivel anatómico y de difusión linfogammagráfica tras el GC, como predictor de la afectación axilar. Sobre un total de 2.273 pacientes afectas de cáncer de mama se obtuvo una muestra válida de 283 pacientes a las que se había analizado el estado del GS de forma adicional. Las variables principales del estudio fueron el estado histológico del GC, del GS y del vaciamiento axilar y se valoró la sensibilidad, especificidad y exactitud de la prueba.

Resultados: La prueba del GS, con GC positivo, presenta una sensibilidad del 61,1%, una especificidad del 78,7%, un valor predictivo positivo del 45,8% y un valor predictivo negativo del 87,3%, con una exactitud del 74,7%.

Conclusión: El estudio del GS junto con la técnica del GC permite realizar una estadificación más precisa del estado axilar, en pacientes con cáncer de mama, en comparación con el estudio único del GC.

Introduction

The surgical management of invasive breast cancer has evolved dramatically toward increasingly conservative treatments, while still maintaining oncological standards. In the axillary area, the sentinel lymph node (SLN) technique constitutes the ''gold standard'' method for correct breast cancer staging and subsequent determination of the most appropriate treatment.[1–4] This test has a high negative predictive value and, in addition, represents one of the most relevant predictive factors after the diagnosis of the disease.[5–7]

At present, it is accepted not to perform axillary lymph node dissection (ALND) in the presence of micrometastasis or isolated tumor cells.[8,9] However, there is controversy regarding the need for ALND in cases where macrometastasis is detected, since in these cases the SLN is the only ganglion affected in approximately 70% of patients, which means that a large number of total axillary dissections (AD) are avoidable.[10–12]

There is also the reasonable doubt that, by carrying out ALND, an elevated number of patients with macrometastasis in the SLN without involvement in the rest of the axilla are being overtreated, with the associated morbidity that this implies. What is more, the Giuliano et al.[13,14] study concludes that patients with 1–2 affected SLN do not require ALND if they are treated with chemotherapy or radiotherapy, as they have the same disease-free survival as patient who undergo AD. For this reason, the scientific community is attempting to determine which predictive method is currently able to define in which patients ALND should be avoided.

The objective of this study was to analyze the utility of the secondary node (SN) analysis as a predictive factor for axillary involvement to avoid unnecessary AD. The SN is the next lymph node both anatomically and in lymphatic drainage, located centripetally toward the thoracic duct, that metastasizes after the SLN (Fig. 1). In addition, to be defined as SN, it should present a radiotracer uptake of 10%–25% of that identified in the SLN as seen with a portable probe during surgery.

Methods

In order to determine the validity of the SN to predict the involvement found in AD, an observational, retrospective and multicenter study was designed (Hospital Universitari Germans Trias i Pujol of Badalona, Hospital of Mataró, Municipal Hospital of Badalona, Hospital Sant Joan de Déu of Martorell, Hospital of Calella, Clínica Sagrada Familia of Barcelona and Hospital del Esperit Sant of Santa Coloma de Gramenet). Data was collected from the period between October 1997 and October 2010.
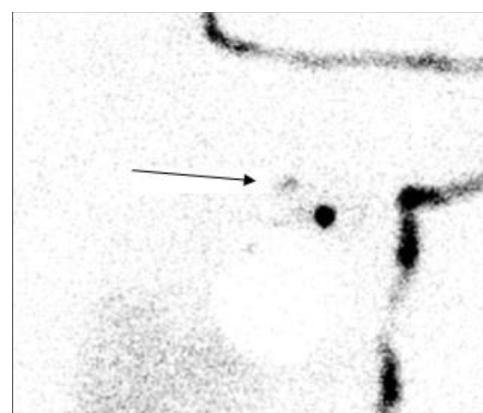

Fig. 1 – Image of a secondary lymph node on lymphoscintigraphy.