

Original Article

Presence of intramammary lymph nodes in the preoperative lymphoscintigraphy to locate the sentinel lymph node. Clinical significance[☆]



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ABSTRACT

Objective: The routes of lymphatic drainage from a breast cancer are the axilla (the most frequent) and the extra axillary regions. Among the latter, there are the so-called intramammary lymph nodes (IMLN). This study has aimed to assess the incidence of IMLNs in our patients and study the evolution of these cases with IMLN in the lymphoscintigraphy.

Material and methods: Thirty-eight patients (out of 1725) with IMLN in the pre-operative lymphoscintigraphy were assessed. During the surgical procedure, using a gamma probe, IMLNs were located and excised. After their harvesting, a meticulous surgical field scan was performed. When the axillary sentinel node was positive for metastasis, a complete axillary lymphadenectomy was performed. In those where the axillary sentinel node was negative and IMLN was positive (IMLN+), axillary lymphadenectomy was also performed, except for one case.

Results: Thirty-four out of the 38 IMLN were obtained (89.5%), because no lymphatic tissue was found in pathology analysis in three cases (8%) and in one patient (3%) IMLN was not found during surgery. Ten (26%) metastatic IMLN were located and the remaining 24 IMLN cases (63%) were metastasis-free. During the clinical follow-up, one patient with IMLN+ developed hepatic metastases. The remaining 33 patients did not present any recurrence. No follow-up data were available for three patients.

Conclusions: IMLN and axillary sentinel node biopsy are recommended when both are depicted in preoperative lymphoscintigraphy. The axilla treatment will only depend on the axillary sentinel node status. Based on the data from other authors and our own experience, avoiding the axillary lymphadenectomy when a metastatic IMLN without axillary involvement seems reasonable.

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Presencia de ganglios intramamarios en la linfogramagrafía prequirúrgica para localizar el ganglio centinela. Relevancia clínica

RESUMEN

Objetivo: Entre las vías de drenaje linfático de un tumor mamario se encuentran las de la cadena axilar (la más frecuente) y a las regiones extraaxilares. Dentro de éstas últimas existen los denominados ganglios intramamarios (GIM). El objetivo de este estudio fue valorar la incidencia de GIM en nuestra casuística y estudiar la evolución de las pacientes que presentaron GIM en la linfogramagrafía.

Material y métodos: Se han evaluado 38 pacientes (de un total de 1725) que presentaron un GIM en la linfogramagrafía preoperatoria. Durante el acto quirúrgico, utilizando una sonda detectora, se procedió a su localización y exéresis. Posteriormente a su resección y meticuloso rastreo del lecho quirúrgico, se realizó linfadenectomía axilar en los casos en los que el GC axilar fue positivo para metástasis. En aquellas pacientes con GC axilar negativo y GIM positivo (GIM+) se realizó también, con excepción de un caso, linfadenectomía axilar.

Palabras clave:

Ganglios intramamarios
Linfogramagrafía
Cáncer de mama
Ganglio centinela

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Resultados: Se obtuvo el GIM en 34/38 pacientes estudiadas (89,5%), porque en tres (8%) no se encontró tejido linfóide en el análisis anatomopatológico y en una (3%) no se detectó el GIM en la cirugía. Se localizaron 10 GIM metastáticos (26%) y los 24 casos restantes (63%) resultaron libres de metástasis. Durante el seguimiento clínico una de las pacientes con GIM+ desarrolló metástasis hepáticas. Las 33 pacientes restantes no presentaron recidiva. No disponemos del seguimiento de tres pacientes.

Conclusiones: Recomendamos realizar biopsia del GIM y del GC axilar cuando ambos se detecten mediante linfogammagrafía y, que el manejo axilar dependa únicamente del estatus del GC axilar. Según los datos de diversos autores y nuestra experiencia, parece razonable omitir la linfadenectomía axilar cuando nos encontremos ante un GIM+ sin afectación axilar asociada.

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Introduction

The status of the lymph nodes is one of the main prognostic factors in breast cancer and their study is crucial for cancer staging.¹ Nowadays, sentinel lymph node (SLN) biopsy is the gold standard test for regional lymph node staging and has prevented axillary lymphadenectomy and its subsequent morbidity in most early stage breast cancer patients.²

Among the potential lymphatic drainage routes of a primary breast tumor there are those of the axillary region (the most frequent) and those that drain to extra-axillary basins (internal mammary region and supraclavicular region). The so-called intramammary lymph nodes (IMLNs)³ are another potential drainage route.

IMLNs are lymph nodes found within the breast parenchyma,⁴ which are different from those found in the lower axillary region.^{5,6} They are most commonly found in the upper outer quadrant (UOQ), although they may be present in any of the other quadrants. IMLN incidence rate ranges widely from 0.2% to 12% when detected by lymphoscintigraphy.^{3,7} Variability is wider when identified in anatomopathological samples and ranges from 1% to 48%.^{6,8} Percentage of detected metastases in these lymph nodes ranges from 21% to 34%.^{9,10}

According to the American Joint Committee on Cancer metastases found in these nodes have the same impact on cancer staging as those found in the ipsilateral axillary lymph nodes and studies suggest they are a bad prognosis factor.¹ A recent review of the MD Anderson Cancer Center experience led to the conclusion that disease-free survival time and total survival time were significantly shorter in the group with metastases found in the IMLN.¹¹

The goal of this study was to consider incidence of IMLN in our casuistry and to assess the evolution of patients with IMLN found in the lymphoscintigraphy.

Material and methods

Patients

All patients included prospectively in the data registry of the Nuclear Medicine Service from January 1999 to November 2013 were reviewed. A total of 1725 breast cancer patients qualified for SLN biopsy. Thirty-eight patients presented internal mammary lymph node drainage.

In 4 patients, the tumor had been resected in a surgery prior to the SLN biopsy.

Median clinical follow up was 65 months (range, 7–15 years). There are no available follow-up data of 3 patients.

Lymphoscintigraphy

The day before surgery patients received 111MBq of ^{99m}Tc nanocolloid (Nanocol[®] GE Saluggia, Italy), injected intratumorally in most cases. The volume injected ranged from 0.2 to 0.5 ml,

depending on the technique chosen. In non-palpable breast lesions, for which ROLL technique is usually chosen, 0.2 ml were injected under ultrasound guidance with a 20- to 22-G needle. On the other hand, in palpable lesions or extensive calcifications 0.5 ml were administered by direct intratumoral injection or, in some cases, subareolar or subdermal injection.

Puncture location was: peritumoral in 3 cases, intratumoral in 26 cases, subdermal in 4 cases and subareolar in 5. After the radiotracer administration, early and late (30 min and 2 h) planar images of the thoracic region were acquired. They last 180 s each in anterior, oblique and lateral projections in order to optimize the location of SNL. SPECT/CT images of the regions of interest were acquired in 8 of the cases (SPECT/CT was available in our Department since June 2007) (Fig. 1). Then, the approximate location of the SLN was marked on the skin of the patient in oblique projection and with the help of a ⁵⁷Co-penmark, in order to provide reference for intraoperative identification. To retrieve the images a single-head gamma camera with a high-resolution low energy collimator was used (E-Cam, Siemens, Erlangen, Germany). An Infinia Hawk-eye 4 gamma camera (GE, Wauwatosa, WI, USA) was used for the SPECT/CT images. The SPECT/CT images reconstruction was done in a workstation (Xeleris, GE) and subsequent volume-rendering images were generated using Osirix MD software (Pixmeo SARL, Bern, Switzerland).

All lymph nodes directly connected to the tumor and all single lymph nodes shown in early and late imaging of the lymph drainage area of the tumor have been considered SLNs, as well as all groups of two or more lymph nodes appearing between the injection site and the SLN of the lymphatic drainage area or all groups of two or more lymph nodes appearing in early images and showing increased uptake on delayed images.

Surgery

After the induction of anesthesia in the operating room, the SLN was located with a handheld gammaprobe (Navigator, RMD, Watertown, MA, USA) in the anatomic area observed in the preoperative images. In 14 patients in whom a conventional gamma camera showed lymph nodes near the injection site or with faint tracer uptake, the study was completed with a portable gamma camera (Sentinella S102, Oncovision, Valencia, Spain), which produced intraoperative images.

During surgery we considered SLNs those that had previously been identified on lymphoscintigraphy, which frequently coincided with the most active lymph node intraoperatively found with the gammaprobe in the lymphatic drainage chain. After their resection, a very thorough examination of the surgical bed was done and all other nodes with activity higher than 10% of the maximum detected in a SLN were also resected. Axillary lymphadenectomy was performed in all cases with axillary SNL positive for micrometastases and/or micrometastases, except for 2 micrometastases cases. Lymphadenectomy was also performed in all but one cases with negative SLN and positive IMLN.

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