Case Report

Bilateral axillary and internal mammary drainage in breast cancer without prior surgery during sentinel node mapping

Justo Serrano Vicente, M Luz Domínguez Grande, Carmen Durán Barquero, Jrafael Infante Torre, Lucía García Bernardo, J Ignacio Rayo Madrid, M Isabel Correa Antúnez

Department of Nuclear Medicine, Infanta Cristina Hospital, Badajoz, Spain

ABSTRACT

Lymphatic drainage outside the ipsilateral axilla in breast cancer is discovered in as many as 25% of all sentinel lymph node procedures and it is evidenced by lymphoscintigraphy. Contralateral axillary drainage is a rare clinical situation, mostly if there is not prior breast surgery, but this situation is extremely exceptional if we also found internal mammary chain drainage. We have not found such a case published in literature. This atypical finding is source of doubts because it could have clinical implications in the management of patients. We present a woman just diagnosed of breast carcinoma with hot nodes in bilateral axillary and ipsilateral internal mammary chain lymph nodes, shown by preoperative lymphoscintigraphy. We review published cases with contralateral axillary drainage, which enhance the role of scintigraphic procedure in such cases and show induced controversies in selecting the most adequate management.

Keywords: Breast cancer, contralateral axillary drainage, lymphoscintigraphy, sentinel node

INTRODUCTION

Lymphoscintigraphies performed during sentinel lymph node (SLN) mapping and biopsies in breast cancer have discovered lymphatic extra-axillary drainage in 20-27% of cases.[1] Extra-axillary nodes most often located are: Ipsilateral internal mammary chain (IMC) (17%), intra-mammary (3%), supraclavicular (2%) and interpectoral (2%) nodes.[2]

Contralateral axillary drainage is an unexpected finding that is a source of controversies in the management of these patients.[3-10] This situation is more exceptional when there is not prior breast surgery,[7-10] especially when internal mammary chain drainage is associated. We have not found any such case published in literature.

Access this article online

Quick Response Code:

Website: www.ijnm.in

DOI: 10.4103/0972-3919.106716

CASE REPORT

A 48-years-old woman with no prior surgery of breast or axilla was diagnosed of breast ductal carcinoma in retroareolar region of the right breast with size of 2 cm. Axillary manual exploration and ultrasound were negative. Lumpectomy and sentinel lymphatic node (SLN) biopsy was suggested.

The day prior to surgery, a lymphoscintigraphy was performed with peritumoral injection of two doses of 74 MBq of Technetium-99m-nanocolloid (volume of 0.1 ml) each one. Planar images were acquired at 120 min of injection, including chest in anterior and lateral projections. We acquired images of 3 min in a 256 × 256 matrix using a planar source of Cobalt-57 in anterior projection and an anatomical point source of Tc99m in order to delineate the body shape and locate the nodes. The images showed drainage to ipsilateral axillary nodes, ipsilateral IMC and contralateral axillary nodes [Figure 1].

In the operating room, lumpectomy and SLN biopsy of the three territories were performed. Frozen section and subsequent 2 mm step sections of the paraffin embedded nodes did not reveal metastases in any of the lymph nodes. Surgical wound was closed and regional lymphadenectomy was not performed. Delayed studies with inmunohistochemical techniques were

Address for correspondence:
Dr. Justo Serrano Vicente, Department of Nuclear Medicine, Hospital Infanta Cristina, Avda Elvas S/N, 06080 Badajoz, Spain.
E-mail: titoserrano@gmail.com

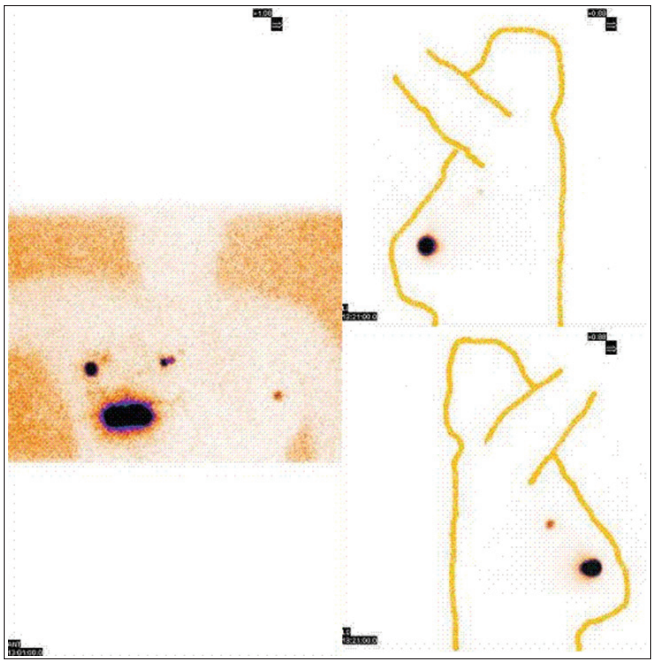

Figure 1: In the left we show anterior image of lymphoscintigraphy after 2 peritumoral injection of Tc-99m-nanocolloid in the retroareolar region of right breast. Bilateral axilla and ipsilateral (internal mammary chain) IMC drainage are depicted with at least, 3 nodes in right axilla, 2 in IMC and only one in left axilla. In the right upper quadrant, in the left lateral projection we can see tracer injection activity in the breast and the only contralateral axillary node. In the right lower quadrant, right lateral projection shows activity in the breast and in the main axillary node

also negative in all nodes. The patient was treated with chemotherapy, radiotherapy and hormone therapy and no significant complications were observed. Two years and 6 months after surgery the patient remains free of disease.

DISCUSSION

There are several works, which show patients with contralateral axillary drainage but with prior history of surgery due to breast cancer, mammoplasty, axillary dissection due to melanoma or excissional biopsy, etc., These abnormal drainages probably would be caused by surgical disruption of the physiological lymphatic pathway, and the clinical implications of them are different to these cases with no prior surgery procedures in the breast or axilla.

We have found only four articles with contralateral axillary drainage and no prior surgery in breast or ipsilateral axilla.[7-10] Simultaneous IMC nodes were not found in any of them. In two cases, the lymphoscintigraphy showed bilateral drainage and all nodes were selected as sentinel and excised. Histological studies did not reveal tumor spread in all nodes and did not impact in the management of the patients.[7,8]

Tumor spread of a contralateral axillary lymph node is considered to be due to distant metastasis (M1) by mean of conventional diagnosis procedures, or due to the presence of other occult primary cancer in contralateral breast. Differentiation between a systemic metastatic disease and an atypical lymphatic spread would be of great interest in the prognosis and management of these patients. Lymphoscintigraphy is the only procedure capable of separating these clinical situations, because extra-axillary lymph nodes are not detectable using blue dye alone.[7-9] Metastases to a contralateral axillary lymph node reflect the lymphatic drainage of the tumor as seen on lymphoscintigraphy. So, the patient should be considered to have a node positive and not metastatic (M1) disease.

Most lymph passes from the breast along interlobular vessels to the subareolar plexus and follows the veins of the breast to the axilla (75%). Lymph from the medial part of the breast, in addition to the axilla, drains into the parasternal lymph nodes.[3] Some authors think that lymph from the skin of the breast may pass to the abdominal wall and opposite breast through the subdermal plexus as it is seen in melanoma, but retrosternal crossover to the contralateral side could be the pathway if there is internal mammary involvement.[3,9] We think that in our patient, the lymph could have passed through the retrosternal pathway to the contralateral side because the tumor was located deep in the retroareolar region as we can see in the Figure 1.

Krause and colleagues[10] described a case, which showed that the only metastatic lymph node was the contralateral axillary sentinel node, a finding, which may impact on adjuvant therapy, if this situation were ignored.

Allweiss, *et al.*,[9] showed a patient with bilateral axillary drainage in which both axillary nodes were positive; ipsilateral lymphadenectomy was performed and four more lymph nodes were removed from the left (contralateral) axilla. All nodes were free of metastases. A complete level I and level II axillary lymph node dissection was not performed on the contralateral side because of concerns about bilateral lymphedema. Probably, this would be the right choice and could be implemented selecting the contralateral nodes by mean of manual exploration removing all nodes enlarged and/or hardened.[11-13]

We think, as the same of Carmon, *et al.*,[7] that all "ectopic" nodes should be considered as sentinel nodes and must be biopsied to reach the most complete staging as possible. The knowledge of extra-axillary lymph nodes containing metastases may lead to better selection of patients for various adjuvant treatments such as radiotherapy to extra-axillary sites of metastatic sentinel lymph nodes or alteration of chemotherapy modalities if an extra-axillary sentinel node is the only metastatic lymph node.[9]

CONCLUSION

In our opinion, lymphoscintigraphy should be always used in addition to or instead of dye methods for lymphatic mapping. The only way to find a metastasis in a contralateral axillary lymph node arose from the primary carcinoma in the opposite

breast is to use lymphoscintigraphy and perform sentinel node biopsy (SNB) of contralateral nodes if founded. The distinction between node-positive and systemic metastatic disease is important considering the different treatment objectives and modalities for node positive versus metastatic breast cancer.

REFERENCES

1. Singletary SE, Allred C, Ashley P, Bassett LW, Berry D, Bland KI, *et al.* Revision of the American Joint Committee on cancer staging system for breast cancer. J Clin Oncol 2002;20:3628-36.
2. Jansen L, Doting MH, Rutgers EJ, de Vries J, Olmos RA, Nieweg OE. Clinical relevance of sentinel lymph nodes outside the axilla in patients with breast cancer. Br J Surg 2000;87:920-5.
3. Sood A, Youssef IM, Heiba SI, El-Zeftawy H, Axelrod D, Seigel B, *et al.* Alternative lymphatic pathway after previous axillary node dissection in recurrent/primary breast cancer. Clin Nucl Med 2004;29:698-702.
4. Lim I, Shim J, Goyenechea M, Kim CK, Krynyckyi BR. Drainage across midline to sentinel nodes in the contralateral axilla in breast cancer. Clin Nucl Med 2004;29:346-7.
5. Barranger E, Montravers F, Kerrou K, Marpeau O, Raileanu I, Antoine M, *et al.* Contralateral axillary sentinel lymph node drainage in breast cancer: A case report. J Surg Oncol 2004;86:167-9.
6. van der Ploeg IM, Oldenburg HS, Rutgers EJ, Baas-Vrancken Peeters MJ, Kroon BB, Valdés Olmos RA, *et al.* Lymphatic drainage patterns from the treated breast. Ann Surg Oncol 2010;17:1069-75.
7. Carmon M, Mintz A, Hain D, Olsha O. Clinical implications of contralateral axillary sentinel lymph nodes. Breast 2006;15:266-8.
8. Luján B, Carrera D, Picas J, Izquierdo V, Siurana R, Quintero L, *et al.* Detection of contralateral axillary sentinel lymph node by lymphoscintigraphy in breast cancer: Prognostic implications. Rev Esp Med Nucl 2010;29:135-7.
9. Allweis TM, Parson B, Klein M, Sklair-Levy M, Maly B, Rivkind A, *et al.* Breast cancer draining to bilateral axillary sentinel lymph nodes. Surgery 2003;134:506-8.
10. Krause A, Dunkelmann S, Makovitzky J, Küchenmeister I, Schümichen C, Reimer T, *et al.* Detection of atypical site of "sentinel lymph nodes" by lymph drainage scintigraphy in patients with breast carcinoma. Zentralbl Gynakol 2000;122:514-8.
11. McLaughlin SA, Wright MJ, Morris KT, Giron GL, Sampson MR, Brockway JP, *et al.* Prevalence of lymphedema in women with breast cancer 5 years after sentinel lymph node biopsy or axillary dissection: Objective measurements. J Clin Oncol 2008;26:5213-9.
12. Serrano Vicente J, Infante de la Torre JR, Domínguez Grande ML, García Bernardo L, Durán Barquero C, Rayo Madrid JI, *et al.* Optimization of sentinel lymph node biopsy in breast cancer by intraoperative axillary palpation. Rev Esp Med Nucl 2010;29:8-11.
13. Tavassoli FA, Devilee P, editors. TNM classification of carcinomas of the breast. WHO classification tumours. Pathology and Genetics Tumours of the Breast and Female Genital Organs. Lyon: IARC Press; 2003. p. 11-3.

How to cite this article: Vicente JS, Domínguez Grande ML, Barquero CD, Torre JI, Bernardo LG, Rayo Madrid JI, Correa Antúnez MI. Bilateral axillary and internal mammary drainage in breast cancer without prior surgery during sentinel node mapping. Indian J Nucl Med 2011;26:205-7.

Source of Support: Nil. **Conflict of Interest:** None declared.