

BREAST LYMPHOSCINTIGRAPHY FOR SENTINEL NODE IDENTIFICATION IN BREAST CANCERS WITH CLINICALLY-NEGATIVE AXILLARY NODES

Dear Sir,

I read with great interest the article by Drs Namwongprom et al⁽¹⁾ and would like to congratulate them on bringing forth their experience. At the same time, I would like to present more information on the technicalities of lymphoscintigraphy because despite the widespread acceptance of lymphatic mapping/sentinel lymph node (SLN) for use in staging breast cancer, the specifics of the technique are still evolving, which may be the reason for different results of SLN biopsy at different centres. In particular, there is controversy regarding the most appropriate site of injection.

The concept of SLN biopsy in breast cancer surgery relates to the fact that the tumour drains in a logical way through the lymphatic system, from the first to upper levels. Therefore, the first lymph node met (the sentinel node) will most likely be the first to be affected by metastasis, and a negative sentinel node makes it highly unlikely that other nodes are affected. Furthermore, histological sampling errors can be reduced if a single (sentinel) node is assessed extensively rather than few histological sections in a high number of lymph nodes per patient. Although the pattern of lymph drainage from breast cancer can be variable, the mammary gland and the overlying skin can be considered as a biological unit in which lymphatics tend to follow the vasculature.

Therefore, considering that tumour lymphatics are disorganised and relatively ineffective, subdermal and peritumoural injections of small aliquots of radiotracer is preferred to intratumoural administration. ^{99m}Tc-labelled colloids with most of the particles in the 100nm to 200nm size range would be ideal for radioguided sentinel node biopsy in breast cancer⁽²⁾. Intralesional injections have been performed outside the United States but rarely within the United States. Intralesional injections have been considered by several authors as the most accurate, as they simulate drainage from the tumour itself^(3,4). However, there can be poor lymphatic drainage from the lesion because of poor lymphatic permeation of solid tumour tissues⁽⁵⁾. Total volumes of injected material generally range from just below 1 ml to a maximum of 8-16 ml⁽⁶⁾. Others suggest that extreme volumes are not physiological and even raise the question of tumour spread if such volumes are administered intralesionally^(7,8). A more modest volume of 3-4 ml is probably adequate. Breast size also dictates the volume of injection, with smaller volumes recommended for small breasts and larger volumes for large breasts.

Mild massaging for a short period is probably beneficial. Vigorous and prolonged massaging has been criticised by some as not physiological and potentially harmful by spreading micro-metastases and can lead to contamination if the proper technique is not used^(9,10). Use of modified oblique view of axilla (MOVA) can improve identification of axillary sentinel nodes⁽¹¹⁾. Sentinel lymph node dissection (SLND) has been a promising new technique in breast carcinoma staging, but could be unreliable in certain patient subsets. The current study assessed whether age, preoperative chemotherapy, tumour size, and/or previous excisional biopsy influenced the identification of SLNs or the reliability of a node-negative SLND in predicting a node negative axilla. Preoperative chemotherapy was associated with an unacceptably high false-negative (FN) rate for SLND. While larger tumour size was also associated with FN SLND, this effect might have been due to preoperative chemotherapy use in these patients. Small sample size precluded determining whether excisional biopsy before mapping increased FN SLND rates independently⁽¹²⁾. The results of SLN mapping with same-day and day-before injection of radioisotope are virtually identical. The logistical advantages of day-before injection do not compromise the success of the procedure⁽¹³⁾.

Yours sincerely,

Umar Sadat
Department of Surgery
Addenbrooke's Hospital
Cambridge University Hospitals NHS Foundation Trust
Cambridge
The United Kingdom
Email: umar.sadat@addenbrookes.nhs.uk

REFERENCES

1. Namwongprom S, Boonyaprapa S, Ekmahachai M, et al. Breast lymphoscintigraphy for sentinel node identification in breast cancers with clinically-negative axillary nodes. Singapore Med J 2005; 46:688-92.
2. Mariani G, Moresco L, Viale G, et al. Radioguided sentinel lymph node biopsy in breast cancer surgery. J Nucl Med. 2001; 42:1198-215.
3. Valdes-Olmos RA, Jansen L, Hoefnagel CA, et al. Evaluation of mammary lymphoscintigraphy by a single intratumoral injection for sentinel node identification. J Nucl Med 2000; 41:1500-6.
4. Doting MH, Jansen L, Nieweg OE, et al. Lymphatic mapping with intralesional tracer administration in breast carcinoma patients. Cancer 2000; 88:2546-52.
5. Krag D. Why perform randomized clinical trials for sentinel node surgery for breast cancer? Am J Surg 2001; 182:411-3.
6. Uren RF, Thompson JF, Howman-Giles RB. Sentinel lymph node biopsy in breast cancer. Lancet 1998; 352:1472-3.
7. Tanis PJ, Nieweg O, Valdes Olmos RA, Kroon BB. Anatomy and physiology of lymphatic drainage of the breast from the perspective of sentinel node biopsy. J Am Coll Surg 2001; 192:399-409.
8. Rosser RJ. A point of view: trauma is the cause of occult micrometastatic breast cancer in sentinel axillary lymph nodes. Breast J 2000; 6:209-12.
9. Rosser RJ. Sentinel lymph nodes and postinjection massage: it is premature to reject caution. J Am Coll Surg 2001; 193:338-9. Comment in: J Am Coll Surg 2001; 192:9-16.
10. Haigh PI, Hansen NM, Giuliano AE, et al. Factors affecting sentinel node localization during preoperative breast lymphoscintigraphy. J Nucl Med 2000; 41:1682-8.
11. Nason KS, Anderson BO, Byrd DR, et al. Increased false negative sentinel node biopsy rates after preoperative chemotherapy for invasive breast carcinoma. Cancer 2000; 89:2187-94.
12. McCarter MD, Yeung H, Yeh S, et al. Localization of the sentinel node in breast cancer: identical results with same-day and day-before isotope injection. Ann Surg Oncol 2001; 8:682-6.

2006 SMJ Best Research Paper Awards

The Singapore Medical Association will be presenting awards for the Best Research Paper published in the SMJ in 2006. All original research papers that are published in the SMJ during the one year period from January 1, 2006 to December 31, 2006 will be considered for this award.

The following are the judging criteria:

- **The paper with the most potential impact on clinical practice**
- **Most rigorous study design/research methodologies**
- **Comprehensive data analysis and balanced discussion**
- **Data interpretation**

Distinguished members of the medical profession will be invited to serve on our panel of judges for selecting the winning papers.

The authors of the winning papers selected by our panel of judges will receive cash prizes for the first, second and third places. Prize winners will also receive a commemorative trophy and certificate.

We thank you for your support of the SMJ. The quality of our journal depends on the quality of your submissions.