Breast Cancer and Malignant Melanoma Preoperative Lymphoscintigraphy in “Dharmais” Cancer Hospital

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ABSTRAK

Pemeriksaan limfoskintigrafi sebagai pemetaan kelenjar getah bening preoperatif telah banyak diteliti khususnya pada pasien kanker payudara dan melanoma maligna sebagai bagian dari prosedur sentinel node. Prosedur ini telah diterapkan pula di RS. Kanker “Dharmais” dimana dilakukan injeksi isotop preoperatif, injeksi blue dye dan penggunaan gamma probe intraoperatif.

Dilaporkan 48 pasien kanker payudara dan 5 pasien melanoma maligna yang menjalani prosedur limfoskintigrafi. Sebanyak 75,7% dari 37 pasien breast conserving treatment ditemukan positif limfoskintigrafi sedangkan seluruh pasien melanoma maligna didapatkan hasil positif limfoskintigrafi. Dengan menggunakan blue dye dan gamma probe intraoperatif, sentinel node dapat diidentifikasi walaupun hasil limfoskintigrafi negatif. Preoperatif limfoskintigrafi merupakan komplementasi prosedur sentinel node dimana hasil pemetaannya akan memberikan arahan saat operasi.

Kata kunci: kanker payudara, melanoma maligna, limfoskintigrafi, sentinel node, blue dye, gamma probe, breast conserving treatment

ABSTRACT

Lymphatic mapping with lymphoscintigraphy has already highlighted by investigators as a phase in sentinel node procedures. This procedure has already implemented in Dharmais hospital and consist three tracers which are comprised radioisotope, blue dye and gamma probe.

We reported 48 breast cancer patients and 5 malignant melanoma patients which were undergone pre operative lymphoscintigraphy. There were 75.7% of 37 (82.3%) patients with breast conserving treatment have positive lymphoscintigraphy and all malignant melanoma patients were positive. Sentinel node were identified even in negative lymphoscintigraphy using blue dye and gamma probe.

Pre operative lymphoscintigraphy is a complement of sentinel node procedure which will direct surgeon during surgical procedure.

Key Words: breast cancer, malignant melanoma, lymphoscintigraphy, sentinel node, blue dye, gamma probe, breast conserving treatment

INTRODUCTION

Since the value of lymphatic mapping is highlighted by many investigators such as in penile cancer, malignant melanoma, gynaecological cancer also gastrointestinal cancer there are increasing knowledge about lymphnodes, especially lymphatic pathway and its influence in clinical application. Lymphoscintigraphy as part of examination to visualize lymph nodes has an important role to assist surgeon intraoperatively to identify sentinel node.1

Clinical application of sentinel node procedure in malignant melanoma and breast cancer have been reported by researchers, and this procedure gain more data to prove that lymphnode biopsy is worthwhile for patients.

Standard lymphatic mapping technique is consisting three tracers which are comprised radioisotope, blue dye and gamma probe. Those tracers complemented each others to identify sentinel node and to have the optimal result interdisciplinary working team is an

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important issue.\textsuperscript{1,2}

We reported forty eight patients who underwent preoperative lymphoscintigraphy and included our first patients without gamma probe, later we performed also in node negative advanced breast cancer. Although malignant melanoma case was not frequently found in our institution, we reported 5 cases of malignant melanoma.

\textbf{PATIENTS AND METHODS}

We were conducting prospective study from February 2001 until February 2003, and there were 50 patients who were performed pre operative lymphoscintigraphy. The main reason for this study was axillary perseverance in breast conserving treatment (BCT) patients. In this study we performed lymphoscintigraphy in BCT patients and patients clinically negative axillary node.

We performed lymphoscintigraphy, blue dye injection and without intraoperative gamma probe, in 8 patients and then in 40 patients with intraoperative gamma probe. Two patients were not in inclusion criteria, 1 case was a stage IV with lung metastasis but lesion in breast undetected before and other case was a recurrence in other quadrant of the breast. Both of cases were clinically negative axillary node.

There were five malignant melanoma patient which were in stage III with enlargement of lymphnodes, but 1 patient was Clark IV and non palpable inguinal lymphnode.

Preoperatively all the patients underwent dynamic and static lymphoscintigraphy which were injected peritumorally in breast cancer and intradermally in malignant melanoma with 1-2 mCi nanocolloid (Cis Bio, approximately 100 nm). Dynamic studies performed for 20 minutes, 30 sec/frame and static studies in 2 and 4 hours after radioactive injection with anterior and lateral position. Surgery was performed 16-18 hours after radioisotope injection.

Approximately 5 to 10 minutes before surgery we injected peritumoral or intra dermal of 1-2 ml blue dye. Gamma probe (Neoprobe 2000) used to localize sentinel node before skin incision. Blue nodes which were identified and also positive counts with gamma probe were dissected and examined in department of pathology.

\textbf{RESULT}

\textbf{LYMPHOSCINTIGRAPHY IN BREAST CANCER}

From the first 8 patients there were 3 cases with negative lymphoscintigraphy and all of these patients were histologically negative of metastasis in lymphnodes. In 3/8 (37.5\%) patients were not found any blue node during surgery. But 2/8 patients (25\%) with negative lymphoscintigraphy intraoperatively we found blue nodes and tract. One patient with negative preoperative lymphoscintigraphy and non blue node was found, histopathological finding was ductal carcinoma in situ (DCIS).

\begin{table}[h]
\centering
\begin{tabular}{|c|c|c|}
\hline
\textbf{Table 1. Preoperative lymphoscintigraphy without gamma probe during surgery.} & & \\
\hline
\textbf{Preoperative Lymphoscintigraphy} & \textbf{Blue Dye Injection} & \\
& \textbf{Blue Node} & \textbf{Non Blue Node} \\
\hline
Positive & 2 & 3 \\
\hline
Negative & 2 & 1 \\
\hline
Total & 4 & 4 \\
\hline
\end{tabular}
\end{table}

Preoperative lymphoscintigraphy result with lesion size were summarized in table 2. In 4/6 (67\%) non palpable lesions showed negative preoperative lymphoscintigraphy and also negative node metastasis. Lesion size less than 30 mm were found 28/37 (75.7\%) of patients with positive lymphoscintigraphy.

\begin{table}[h]
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\begin{tabular}{|c|c|c|c|}
\hline
\textbf{Table 2. Breast lesion and preoperative lymphoscintigraphy findings.} & & & \\
& \textbf{Size of lesions} & & \\
& \textbf{npbl} & \textbf{≤30 mm} & \textbf{>30 mm} \\
\hline
Positive & 2 & 28 & 4 \\
\hline
Negative & 4 & 9 & 1 \\
\hline
Total & 6 & 37 & 5 \\
\hline
\end{tabular}
\end{table}

In negative lymphoscintigraphy blue nodes were found in 4/11 (36.7\%) patients. On the other hand blue nodes were unidentified in 20 (62.5\%) of positive lymphoscintigraphy. In one patient we could not found any node, a woman 63 years old, with ductal carcinoma in situ. Other patients 97.6\% (40/41) lymph nodes were identified with three tracers.

From positive lymphoscintigraphy we identified 20/34 (58.8\%) only one hot spot, 5/34 (14.7\%) with 2 hot spot and 4/34 (11.3\%) with 3 hot spots. Dynamic phase of lymphoscintigraphy were able to differentiate the first hot spot in 3 cases from 4 patients with 3 hot spots, also 3 cases with lymphatic lake in internal mammary area. In one case two hot spots that were found localized in axilla and internal mammary.

Lesion size and negative lymphoscintigraphy finding were summarized in table 3. In this table we compared lesion sizes and histopathologic results. Other histopathologic result is one case of lobular carcinoma. In 7/14 cases were ductal carcinoma in situ, and 4/6 (66.6\%) ductal invasive cases were above fifty years.

Result of identification of sentinel node with 3 tracers was failed in one patient and 39/40 (97.5\%) were identified and proved by histopathologic examination.
the site of biopsy. Different positions also help to
overcome of superposition of primary tumor injection,
in hanging breast position patients complained about
the uncomfortable position and we were not do this
position as routine procedure except we have difficulties
with anterior and lateral positions.

Lymphoscintigraphy and histopathological finding
were correlated and we found that lesion size less than
3 cm had 82.5% (28/34) positive lymphoscintigraphy.
Non palpable lesion with positive lymphoscintigraphy
was diagnosed as Paget’s of the nipple and DCIS with
nipple discharge.

Negative lymphoscintigraphy in our study was 29.2%.
and during surgery sentinel node were identified with
another tracer except one case, blue dye and gamma
probe were negative. This case was a non palpable lesion
and injection was guided with wire, intraparenchymally
and histopathologic result was low grade DCIS. With
three tracers, we identified 39/40 (97.5%) of sentinel
nodes. Other investigators reported 98.4% with certain
criteria.3

Lymphoscintigraphy in melanoma showed positive
hot spot except one case with post biopsy in axillary
area. During surgery blue patent injection visualized
blue tract and blue node which was positive metastasis.
One case with Clark IV melanoma lymphoscintigraphy
was positive in non palpable inguinal node, and,
histopathologic result showed metastasis. Lymphoscintigraphy
in melanoma showed a good result
and many investigators reported with sentinel
identification range 90-98% also highlighted with varies
of pattern lymphatic spreading in trunk or head and
neck.4

Pre operative lymphoscintigraphy is a complement
in sentinel node procedure, the technique is simple and
localizing sentinel node before surgery will give a better
direction for surgeons to identify sentinel node
intraoperatively.5

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