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Sentinel lymph node biopsy, information gained both from testing and applying period

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Background: The number of sentinel lymph nodes (SLN) should be biopsied and the necessity of immunohistochemistry (IHC) of the SLN are still questioned.

Aim: The aim of our study was to get information from both the testing (TP) and the applying period (AP) of SLN biopsy in our unit regarding the questions raised above.

Material and Methods: 315 patients were subjected to SLN biopsy in our unit. The axillary lymphatic mapping was performed by subdermal injection of 99mTc-labelled albumin the day before surgery, combined with subareolar injection of blue dye just before the operation. During the TP 101 patients were subjected to SLN biopsy, without frozen section, and axillary lymph node dissection (ALND). During the AP the 214 patients were subjected to ALND if the SLN was found to be infiltrated on frozen section (FS). The SLNs were examined by regular histology (RH) and IHC.

Results: During the TP in 94% of patients a single only SLN was located and examined, with an average 1.02 SLN per patient (range 1−3). On the contrary during AP in 60% of patients more than one SLN were excised and biopsied with an average of 1.87 SLN per patient (range 1−7). During both periods there were 10 cases with the SLN found negative on RH and positive on IHC (3.17%). Five of them were infiltrated and 5 microinfiltrated. This node proved to be the only positive in all cases of TP. There was also a case in which RH was positive and IHC was negative (0.31%). The negative predictive value (NPV) is 96.2% and the positive predictive value is 98.2%. This discrepancy between RH and IHC was significantly less common when more than one SLN was examined (1.6% vs 3.7%, $p < 0.01$). Additionally from the TP there were 6 false negative SLN biopsies, with 1 to 5 infiltrated nodes found on ALND (5.9%). The NPV is 92.5%. Fifty five patients from both periods were found to have infiltrated the SLN (17.5%) and in 31 of them the only infiltrated node was the SLN (56%). Having this in mind, if only one SLN is biopsied instead of 2 or 3 there is a high possibility that the infiltrated one can be missed. From the 4 cases with one SN microinfiltrated who were subjected to ALND, in one case two more nodes were found infiltrated, and in this case only one SLN had been examined. From the 8 patients with only one of the two SLNs found positive, in only one case another infiltrated node was found on ALND (12.5%).

Conclusions: IHC of the SLN is necessary in order to identify microinfiltration and to reduce the false negative RH cases. If the SLN is microinfiltrated there is a possibility that other LNs can be found positive with ALND.

As more experience is gained, more than one SLNs are biopsied and this reduces the false negative FS biopsies.

The necessity of ALND when only one among the examined SLNs is infiltrated or microinfiltrated on IHC is questioned.

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Predictors of positive non-sentinel lymph nodes in breast carcinoma cases with sentinel lymph node biopsy

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Background: Lymph node metastases are the most significant traditional prognostic factor for patients with breast carcinoma. Introducing sentinel node biopsy (SNB) created a new challenge to patient management. A positive SNB is followed by axillary nodes dissection. The aim of our study is to search for factors affecting probability of finding positive non-sentinel axillary node(s) on the basis of properties of sentinel nodes metastases (sub capsular, interstitial, mixed, multifocal or diffuse metastasis; infiltration of perinodal adipose tissue) as well as on properties of primary tumor (tumor size, grade, steroid receptor status and HER2 status).

Material and Methods: All patients followed sentinel node biopsy and pathology assessment in Warsaw Cancer Center. The total of 1028 biopsies in early (tumor <3 cm, non palpable nodes) breast cancer patients were performed in years 2004–2007. The visualisation of sentinel node was performed using both technetium (Tc99) and methylen blue. This study was performed on 200 patients, who had metastasis in sentinel node. In all cases sentinel lymph nodes were cut on slices not thicker than 2 mm and paraffin blocks were made. The sentinel lymph nodes was examined by H&E. All positive H&E slides were reexamined by two pathologist and type of metastasis were determined and added to former pathologic data. Information on primary tumor and receptors status was based on original pathology reports.

Results: In our study tumor size, HER2 status, diffuse type of metastasis in non-sentinel lymph node (more than 50% of lymph node was infiltrated by carcinoma), infiltration of perinodal adipose tissue, number of positive sentinel lymph nodes (if more than one was find during biopsy) were significant predictors for positive non sentinel lymph node.

Conclusions: These results suggest that we can predict situations in which metastases to axillary lymph nodes other that sentinel nodes are more likely and those, in which subsequent axillary lymph node dissection may be avoided.

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Yield from the application of sentinel node biopsy and its impact on hospital stay

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Background: Effectiveness of the analysis of patients with breast cancer undergoing sentinel node biopsy measured in terms of the reduction on hospital stay and the use of rehabilitation service resource, and therefore its cost.

Material and Methods: A prospective study was carried out on two cohorts of patients diagnosed with breast cancer in the "12 de Octubre" hospital from April 2006 to May 2007. The first group of 62 patients underwent a sentinel node biopsy (SNB), and in the second one of 57 patients a complete axillary dissection (AD) was performed. Statistical analysis was carried out with SPSS 13.0.

Results: Axillary disease is present in 12.1% of SNB patients vs 38.6% of AD patients.

Therefore, not only 87.9% of SNB patients benefited from this treatment without the morbidity associated to the AD surgery but also 61.4% of AD patients could have avoided the damages associated to this type of surgery. 1/8 of patients of the SNB group had axillary disease vs 2/5 in AD group ($p < 0.0001$).

Average hospital stay, measured in days, in the SNB group was shorter than in the AD group (2 vs 6). Hence, if we take into account the total number of patients in each group the total hospital stay in the SNB group would 124 days (62 patients $\times$ 2 days) whereas in the AD group it would be 342 days (57 patients $\times$ 6 days).

The cost per day of a patient admitted in the hospital is 616.29 €. The hospital saved in terms of hospital stay 216 days [54 patients $\times$ (6days − 2days)] with the SNB-negative patients. In terms of their cost 133,056€ (216 days $\times$ 616.29€). In contrast, the hospital fell into additional expenses due to AD patients without axillary desease present. Their hospital stay was 140 days [35 patients $\times$ (6days − 2days)] with a cost of 86280.6€ (140 days $\times$ 616.29€).

Besides, we must not forget the additional cost derived form the use of the rehabilitation service. In the AD group all patients, no matter their nodal status, needed an average of 7 visits (2 intrahospital, 2 pre-treatment coadjuvant, 3; monthly, half-yearly and annually after the surgery).

Conclusion: The SNB is an effective and less aggressive surgery technique. It reduces substantially the hospital stay in terms of days and cost. Hence, the SNB in our hospital complies with profitability criteria.

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Endoscopic sentinel lymph node biopsy

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Background and Purpose: Since its introduction in the mid-1990s, sentinel lymph node biopsy has been rapidly and widely adopted for axillary staging of clinically node-negative breast cancer patients. However there have been some controversies in clinical application because of its various identification rates and false negative rates. The objective of this prospective study was to assess the usefulness of endoscopic sentinel lymph node biopsy.

Materials and Methods: This study was carried out in 39 breast cancer patients (bilateral breast cancer: 2 cases) who underwent endoscopic sentinel lymph node biopsy at the Department of Surgery in Soonchunhyang University from May to September of 2007. The technique involved the injection of 5 ml of 0.5% indigocarmine or Tc-99m tin colloid