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POSTER

Imprint cytology of sentinel lymph node in patients with breast cancer is a reliable method

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Introduction: Sentinel node biopsy, in many centers, became a standard method of treatment of breast cancer patients. The result of pathologic examination of sentinel node indicates whether an axillary lymphadenectomy should be performed or not. However, intraoperative pathologic examination is a time and work consuming method. Imprint cytology can simplify the procedure of intraoperative evaluation of sentinel node status.

Aim: Assessment of sensitivity of intraoperative imprint cytology in patients with breast cancer undergoing a sentinel node biopsy.

Material and Methods: Studies were conducted in Department of Surgical Oncology, Medical University of Lodz, Poland, from November 2002 to October 2003, and in Department of Surgical Oncology, Medical University of Gdansk, Poland, from November 2001 to January 2003. In 56 patients with breast cancer, 81 sentinel nodes were identified. The sentinel node biopsy was identified using blue dye injected intradermally on the border of areola, or using preoperative lymphoscintigraphy, blue dye mapping and intraoperative detection of gamma radiation (both, blue dye and radioactive tracer injected intradermally on the border of areola. Immediately after sentinel node excision, imprint cytology was performed. The sentinel lymph nodes were dissected in plane parallel to vessel entrance to the examined node. Both parts of lymph were pushed against the slide, fixed and evaluated cytologically. The remaining parts of sentinel nodes were then examined pathologically. In all cases axillary lymphadenectomy were performed. The results of imprint cytology and pathologic examination were compared.

Results: Cytologic examination revealed the presence of metastases in 14 of 81 sentinel nodes (17.3%); pathology revealed metastases in 15 of 81 cases (18.5%). Pathologic examination confirmed the results of cytologic examination in all cases (14/14; 100%). In one case (1/81; 1.2%) imprint cytologic examination did not reveal the presence of metastasis. In this case, the pathology revealed the presence of metastasis in subcapsular part of the sentinel node. The sensitivity of the imprint cytology was 93.3%.

Conclusion: Imprint cytology in patients with breast cancer is a sensitive method of intraoperative evaluation of sentinel lymph nodes.

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Radioguided occult lesion localisation (ROLL) and sentinel node biopsy for impalpable invasive breast cancer

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Background: Radioguided Occult Lesion Localisation (ROLL) is a new technique using Technetium-99m macroaggregates of Human Serum Albumin (HSA) for preoperative localisation of impalpable breast lesions. When ROLL is combined with sentinel node biopsy two injections are usually required: i) Intra-tumoural Tc-99m macroaggregates of HSA; ii) Subdermal Tc-99m Nanocol. Further complex techniques have been described for combining ROLL with Sentinel Node Biopsy using Tc-99m Nanocol. The aim of this study was to simplify the technique of ROLL and sentinel node biopsy without compromising tumour excision and sentinel node detection.

Materials and Methods: Twenty patients with impalpable primary invasive breast carcinoma presenting to the Cambridge Breast Unit between December 2002 and June 2003 were recruited into this study. Following written, informed consent, patients were injected with 0.2 mls (90 MBq) Tc-99m Nanocol mixed with 0.2 mls of normal strength 300 contrast (Omnipaque 300) into the centre of the lesion using a Kopan's localising 21 G needle under stereotactic or ultrasound guidance. Immediately after injection, lateral and cranio-caudal mammograms were carried out to confirm accurate localisation. Immediately pre-operatively in the operating theatre and under general anaesthesia, a periareolar intradermal injection of 2 mls of patent blue dye diluted with 3 mls of sterile water was performed. The sentinel node was identified by blue-stained lymphatics/node and the gamma probe. Surgical excision of the primary tumour was carried out assisted by the probe. The post-excision biopsy cavity was evaluated for any residual counts. The excised specimen was orientated and specimen radiographs performed.

Results: In 8 of 20 (40%) patients an immediate re-excision was carried out because of inadequate clearance based on the surgeon's assessment intra-operatively, specimen radiograph or because of high radioactive

counts in the residual cavity. On histological examination, 18 of 20 patients had clear margins; the 2 patients with positive margins had *in situ* disease. In these patients a further excision was performed as a second operative procedure. The sentinel node was identified in all cases. The number of nodes varied from 1 to 5 with a mean of 2.2. In all 7/20 patients were node positive (5 on routine HE staining; 2 on immunohistochemistry with CAM5.2 antibody). Further axillary dissection confirmed no further disease in the axilla.

Conclusions: This modification of the previously described ROLL technique is feasible and safe and does not compromise tumour excision or sentinel node detection.

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The "Sentinel Chain": Involvement pattern in patients with multiple sentinel nodes can predict non-sentinel node involvement in breast cancer patients

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Background: Currently, the finding of a positive sentinel lymph node (SLN) in breast cancer patients is considered an indication for axillary dissection. This standard of care might prove to be over-treatment in some, if a subgroup of patients with metastatic SLNs and a very low likelihood of further nodal involvement could be identified. Using the radioactivity count (RAC) when multiple SLNs were identified in patients with a metastatic SLN, we attempted to determine by quantitative means whether the pattern of involvement of SLNs in relation to RAC is predictive of involvement of the remaining axillary nodes.

Methods: Our prospective database of 230 patients who underwent SLN biopsy using radio-labeled filtered sulfur colloid, blue dye and palpation during the years 2000–2002, was reviewed. The criteria for inclusion in this retrospective review were: 1) more than 1 SLN was identified by its radioactivity; 2) information regarding degree of radioactivity (counts per second) was available for every SLN identified; 3) there was at least 1 metastatic SLN; 4) a formal axillary lymph node dissection was done. In each patient, RAC and tumor status were individually recorded for every SLN found. The association of SLN metastasis and RAC was compared with the findings on axillary dissection.

Results: One-hundred-fifty-six (67.6%) of all the patients who had a SLN biopsy had more than one radioactive SLN (median=3, range 2–8 SLNs). Seventy patients (30.4%) had 1 or more SLNs with metastasis. Of these, 29 patients fulfilled our criteria for inclusion. We were able to identify a subgroup of 18 patients in whom the SLNs with the highest RAC (or the clinically suspicious non-radioactive nodes) were metastatic, but lymph nodes with a low RAC (or radioactive SLNs in the presence of clinically suspicious, metastatic non-radioactive nodes) were free of disease. There was a single non-SLN involved in only one of these patients (5.6%) on axillary dissection. In another 9 patients in whom all the radioactive SLNs were metastatic, 7 (77.7%) had additional metastatic non-sentinel lymph nodes found on formal axillary dissection. There were 2 other patients with a skip metastasis in whom SLNs with low RAC were metastatic in the presence of a non-involved high RAC node; in both there were no other metastatic lymph nodes on axillary dissection.

Conclusions: This retrospective analysis suggests the presence of a "sentinel chain" of axillary lymphatic drainage. Patients with a "high RAC-metastatic, low RAC-non-metastatic" pattern of SLN drainage have a low likelihood of metastasis in the remaining axillary lymph nodes. If these findings are verified in prospective studies, lymph node mapping of this type may further reduce the number of patients undergoing axillary lymph node dissection. The false negative rate is equivalent to that accepted for the sentinel lymph node biopsy by most authors.

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Adjusting the dose of the radioactive tracer according to patient BMI does not improve visualisation of sentinel nodes

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Background and objectives: Lymphoscintigraphy (LS) fails to visualise hot spots in the axilla in up to 90% patients when intraparenchymal injection routes are used. Non-visualisation is often associated with a failure in intraoperative localisation of sentinel nodes (SN). We aimed to study, whether adjusting the dose of the radioactive tracer according to body mass index (BMI) of the patient leads to more optimal visualisation of the SNs.