

## Abstract

### Summary of histopathological analysis

Sentinel lymph node biopsy is relatively new staging method in breast cancer women. Sentinel lymph nodes are assessed by hematoxylin eosin (HE) and by immunohistochemistry (IHC). The reason of the histopathological analysis of sentinel lymph nodes was to compare histological work up by HE with histological work up by IHC and based on this comparison find if immunohistochemical examination of sentinel lymph nodes brings benefit to the patients or not.

The goals of the histopathological analysis were to compare detection of macrometastases, micrometastases and submicrometastases in sentinel lymph nodes using hematoxylin-eosin examination and immunohistochemical examination according to the Czech Pathological Society guidelines.

Between January 1st 2006 and December 31 st 2008 there were operated 173 patients with 174 breast cancer tumors at the Department of Surgery Pardubice. Based on size of metastases patients were stratified into groups according the American Joint Committee on Cancer (AJCC).

Totally, 173 patients underwent sentinel lymph node biopsy. One patient had bilateral tumor. There were performed 174 breast surgeries with sentinel lymph node biopsy. Using IHC examination there were found additional 15 (8,6%) patients with submicrometastases in sentinel lymph nodes and additional 3 (1,7%) patients with micrometastases in sentinel lymph nodes using IHC examination. There was not found any additional macrometastasis in sentinel lymph nodes by IHC examination. Histopathological analysis showed that sentinel lymph nodes should be assessed by HE examination and by IHC examination.

### Summary of clinical part

The goal of the clinical part was to create Czech Multicentric Study of sentinel lymph nodes and based on it 1) determine the rate of nonsentinel lymph node involvement at CALND in the case of SLN with 1. macrometastases, 2. micrometastases and 3. submicrometastases defined according to the 6th edition of AJCC, 2) to find predictive factors of NSLN involvement

We carried out a retrospective study of patients who underwent sentinel lymph node biopsy for breast cancer between January 1st 2006 and December 31 st 2008 in four centers: in the Department of Surgery, General Hospital Pardubice, in the Department of Surgery, Hospital Atlas Zlín, in the Department of Surgery, University Hospital Pilsen and in the Department of Surgery, University Hospital Ostrava.

Pathologic evaluation of sentinel lymph nodes followed guidelines of Czech Pathological Society. NSLN were positive in N1 subgroup in 50% (45/90), in subgroup N1Mi in 26.7% (16/60) and in subgroup N0 I+ in 6.7% (1/15). Significant predictive factors of NSLN involvement by Fisher's exact test were tumor grade ( $p=0,016$ ) and number of positive sentinel lymph nodes ( $p=0,00004$ ). By  $\chi^2$  test we showed that another prognostic factor of nonsentinel lymph node involvement is size of metastasis ( $p=0,0005$ ). Tumor size ( $p=0,11$ ) were not significant predictive factors of NSLN involvement.

In case of macrometastases and micrometastases the CALND must be performed, because of high incidence of nonsentinel lymph node metastases. Incidence of metastases in NSLN is 50%, respectively 26,7%. There is a high risk of development recurrence in axilla in these cases. In case of submicrometastases the retrospective metaanalysis or prospective randomised trial with more patients is needed get valid results in case of submicrometastases in sentinel lymph nodes and consequent surgical approach to axilla. Based of our results and results above mentioned studies we can conclude, that the most important factors influencing NSLN involvement are: SLN metastasis size, the number of positive SLNs and tumor grade.