Breast cancer is one of the most serious health problems in our society. In the Czech Republic there are nearly 6000 women newly diagnosed annually. Despite the increasing incidence the mortality is leveling off or even decreasing in many countries (152,153). It is probably attributed to earlier diagnosis and the introduction of screening mammograms in many developed countries (154), and new findings in molecular biology of tumors. Several molecular factors are already routinely used in routine clinical practice as prognostic (estrogen and progesterone receptors, HER-2/neu, p53, Ki-67, vascular endothelial growth factor-VEGF), and predictive factors (estrogen and progesterone receptors, HER-2/neu) or therapeutic targets of anticancer treatment (estrogen and progesterone receptors, EGFR, HER-2/neu, HER3, HER4, VEGF, mTOR) (7,45,155-157).

The detection of minimal residual disease in early breast cancer is another attempt to implement modern diagnostic technologies in order to improve treatment outcomes.

The aim of the study was to investigate diagnosis and prognostic implications of minimal residual disease in axillary lymph nodes, and bone marrow of patients with early breast cancer.

The most promising material was bone marrow. From the clinical point of view it is necessary to validate both immunohistochemistry and RT-PCR examination of axillary lymph nodes in order to achieve more accurate interpretation of sentinel lymphadenectomy.

In our study minimal residual disease in bone marrow was detected in 4-41% patients before a neoadjuvant or an adjuvant therapy depending on marker (mammaglobin A, mammaglobin B, CEA) used and the pantients' subgroup. After an adjuvant treatment minimal residual disease (using mammaglobin A, mammaglobin B) was detected in 8% of patients. The prognostic significance of minimal residual disease detected with RT-PCR remains uncertain.

Minimal residual disease in lymph nodes was confirmed on immunohistochemistry in 9% of patients. These results are difficult to interpret due to small number of patients investigated.

A classical chemotherapy has probably very little potential for a further significant improvement of treatment outcomes. Therefore it is absolutely necessary to better understand key molecular mechanisms leading to the onset of malignant disease. Currently there is bustling development of new diagnostic tests and new drugs which significant differs from classical chemotherapy. They are targeted against precisely defined cell targets involved proliferation, DNA repair or apoptosis. Some of these drugs are already used in clinical

practice, others in final stags of clinical staging. I believe this study brought closer experimental approaches to a routine clinical practice.