

PhD Thesis:

PERSONAL STUDIES REGARDING THE MANAGEMENT OF THE AXILLA IN BREAST CANCER PATIENTS

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Axillary status is known as the most important prognostic factor in breast cancer. It plays an important role in staging the disease, guides the surgical and oncological treatment, and independently influences the patients survival. The modern conception involves a minimally invasive attitude or abstinence from lymphadenectomy (where it can be applied), sparing patients of extensive surgery with high morbidity rate.

Thesis idea is generated by the modern approach of axillary surgery, trying to find predictive factors for the positivity of axillary lymph nodes in order to minimize the negative impact of surgery.

In the first study we evaluated the effectiveness of using radionuclide stain exclusively compared to the combined radionuclide method (vital stain and radioactive element) in sentinel node identification and correct and efficient staging of breast carcinoma. This study observed the superior efficiency of sentinel node detection by injecting radionuclide, as well as the risk of understaging by the vital stain method, and we believe that the radioactive method should be used. The combination with the vital stain method is a choice only during the learning curve. Our study identified 35 non-sentinel lymph nodes of which 3 had metastases and in one case the metastases were located exclusively in the non-sentinel lymph node. As such, we can conclude that using the radioactive method combined with the intraoperative evaluation of the suspicious lymph nodes is of paramount importance.

In the second study our purpose was to determine the accuracy of preoperative axillary ultrasound as a method of examination in predicting the presence of sentinel node metastasis in breast cancer patients, in order to be able to avoid unnecessary axillary surgery in selected patients with breast cancer. According to our results we can conclude that preoperative axillary ultrasound cannot predict the positivity of the sentinel node. However, in cases when the cortex of the lymph node is thicker than 2 mm we can expect with highly probability the presence of metastasis in the SLN.

The third study evaluated the morphological and molecular parameters of the primary tumor and the positive sentinel node associated with positive nonsentinel nodes (NSLN) in order to predict the status of the NSLNs without their surgical removal and morphological evaluation so as to reduce the number of unnecessary axillary lymph node dissections. In our series of cases, the studied parameters of the primary tumor and of the SLN cannot predict

the presence of metastasis in the NSLN, although the high value of the odds ratio suggests that the primary tumor diameter and the number of positive SLN and extracapsular extension may be associated with high probability with the positivity of the NSLN.

In the fourth study we evaluated the discordance rate in the ER, PR, and HER2 status and KI67 index between primary tumors and axillary lymph node metastases in multiple breast carcinomas. Our results showed that synchronous axillary lymph node metastases may represent the potential of metastatic breast cancer better than the primary tumor. Especially those patients in whom the primary tumor is hormone receptor and/or HER2 negative but positive for these markers in the axillary lymph nodes could become eligible for hormonal treatment and/or trastuzumab treatment, which may significantly improve the patient's outcome.

The aim of the fifth study was to evaluate the association between clinical-pathological parameters and obesity, and, secondly, whether obese women experience more advanced disease with higher axillary lymph node ratio and higher stage at the time of diagnosis. In our series, breast cancer patients had a high prevalence of obesity and overweight, mostly over the age of 40. Obesity and overweight were strongly associated with larger tumor diameter, lower tumor grade, Luminal A-type tumor, higher number of metastatic lymph nodes, and presence of ECE in the metastatic lymph nodes.

The sixth study evaluated to what extent the preservation or the sectioning of the ICBN during surgery may influence the development of postsurgical paresthesia and pain in patients with breast carcinoma. Our secondary aim was to assess whether these complications may change the breast cancer patient's life quality in the postoperative period. Our conclusion is that the sectioning of the ICBN in our series had a great influence on the development of postoperative paresthesia, in most of the cases localized in the upper arm. Although it does not have a negative effect on the patient's life quality in the postoperative period, we consider that preservation of ICBN is important in order to prevent postoperative paresthesia.

In the last chapter we created a software by using data from previous studies, which was designed to calculate the likelihood of axillary metastasis.

Through these studies we consider that we obtained additional information regarding the management of the axilla in breast cancer patients, which may have an impact on therapeutic decision and can be applied in everyday medical practice.