

ABSTRACT

Charles University in Prague, Faculty of Pharmacy Hradec Králové

Department: Department of Biological and Medical Sciences

Author: Kristína Krupová

Supervisor: PhDr. Zdeňka Kudláčková, PhD.

Consultant: MUDr. Petr Motyčka, PhD.

Title of Thesis: Seroma as a follow-up complication after breast cancer surgery

Introduction: A seroma is one of the most prevalent postoperative complications of breast cancer surgery. Although it is not a life-threatening complication, it may contribute to the significant patient morbidity, prolong their recovery and consequential hospital stays as well as delay adjuvant therapy.

Aim of the thesis: This thesis aimed to look up those patients who experienced the postoperative complication in the form of seroma in the sample of cancer patients who underwent breast cancer surgery. Based on the materials dealing with this issue, we focused on the most frequent factors that may predict the development of this complication and evaluated the impact of the particular factors on the seroma formation and its subsequent puncture.

Methods: A total of 240 patients who had been diagnosed with breast cancer and underwent the surgery at the Department of Surgery of University Hospital Hradec Králové in the period from September 1, 2017, to December 31, 2018, were included in the study sample. Due to the incomplete data, 12 patients were excluded from the sample analysed by us. Ultimately, our sample consisted of 228 patients aged between 25 and 89 years with a mean patient age of 55.4 years and the median value of 60. The evaluated factors were divided into two groups: surgical factors and factors of cancer and the patient. Specific data were obtained from medical records of patients and all data were evaluated and processed based on templates in Microsoft Excel programme. We used probability and chi-square tests when analysing the data.

Results: The incidence of the seroma as the result of breast cancer surgery reached the value of 50 % in our patient sample which proves that this is indeed a frequent postoperative complication. Subsequent removal of seromas by the puncture technique was undergone, except for two, by all patients in whom this postoperative complication occurred. Punctures were divided into two groups based on the volume taken on average at the puncture whereby 28 % accounted for punctures up to

100 ml and 22 % accounted for punctures over 100 ml. We managed to confirm four statistically significant factors influencing both the seroma formation and the total volume of the puncture taken. The type of surgery appears to be a statistically significant factor whether it is surgical procedures within breast cancer or surgical procedures within lymph nodes ($p < 0.001$). Patients undergoing more radical procedures such as mastectomy and axillary dissection, have a higher risk for the seroma formation and also require subsequently more extensive puncture compared to breast-saving procedures in the form of partial mastectomy and sentinel node biopsy. Another significant factor is neoadjuvant chemotherapy ($p < 0.01$ impact on the seroma formation, $p < 0.05$ impact on the amount of punctured liquid), tumor size according to the TNM classification ($p < 0.01$ impact on the seroma formation, $p < 0.001$ impact on the amount of punctured liquid) and the number of metastatic lymph nodes ($p < 0.001$). Patients with more extensive tumours and more extensive deterioration of the nodes by metastases are more like to develop seroma and also a larger amount of serous liquid is subsequently punctured. Other factors that we addressed were: type of the carcinoma $p = 0.589$; BMI $p = 0.2522$; hypertension $p = 0.1740$; smoking $p = 0.1386$; anatomical sublocalization of the tumor $p = 0.0923$; histopathological grading of the carcinoma $p = 0.4569$; positivity of the human epidermal growth factor (HER-2) $p = 0.6667$; Ki-67 proliferation index $p = 0.3802$; the presence of hormonal oestrogen and progesterone receptors $p = 0.4292$ and diabetes mellitus $p = 0.1506$. None of these factors was proved to be statistically significant in our thesis as the levels of statistical significance p achieved values higher than 0.05 .

Conclusion: Seroma belongs to the most common postoperative complications of breast cancer surgery. Factors that may more predict the incidence of this complication are: the type of the surgical procedure, neoadjuvant chemotherapy, tumour size and the deterioration of lymph nodes by metastasis.

Keywords: breast cancer, postoperative complications of breast cancer surgery, risk factors, seroma