

Lymphoedema is a severe postoperative complication after treatment of many malignancies. It is a pathological accumulation of extracellular water (ECW). Early diagnostic tool is needed.

Multifrequency bioimpedance analysis (MFBIA) is a method for detection of changes in ECW. We would like to establish the methodology for detection of lymphoedema of limb in patients undergoing breast cancer surgery.

We measured a control group of 60 women, 5 women with pronounced lymphoedema and a group of 37 patients undergoing a breast cancer surgery during 9 month after the surgery by MFBIA and circumference. Characteristics of the patients were recorded. Different linear extrapolations from 1, 5, 50, 100, 200 kHz were determined to find resistance at 0 Hz for each women; ratio of R0 nondominant/dominant and non-operated/operated limb was evaluated; Pearson correlation coefficient was used to compare correlation of the results and characteristics of the patient.

Extrapolation with the lowest standard deviation was found to be 5, 50, 100 kHz. On the group of women with pronounced lymphoedema higher sensitivity was found by MFBIA compared to circumference measurements. Stronger correlation between the volumes calculated from circumferences with weight and BMI compared to MFBIA was found. We found statistically significant relationship between the type of operation, age and the size of the tumour. There was a significant relationship between size and positive lymph nodes.

Lymphoedema was found in 14 women in the tested group. The best association between patient's subjective symptoms was with the MFBIA measurement. In three cases MFBIA revealed an elevation of ECT before the patients' symptoms. In 43 % lymphoedema was diagnosed by at least of detection methods in group with SLNB.