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Limitations of functioning in everyday life in women surgically treated for breast cancer

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Summary

Admission: The primary method of treatment more frequently occurring breast cancer is surgery. The occurrence of secondary lymphedema and other symptoms of upper limb can reduce the efficiency of the patient causing hindering her daily life and functioning.

The goal of the work It is to present a range of restrictions on daily functioning in patients surgically treated for breast cancer associated with the changes occurring in the limb on the side of the operated breast,

Material and methods: The material consisted of 151 women treated surgically for breast cancer (T_{1-4} N_{0-3} M_0) in the Oncology Center of the Lublin Region St. John of Dukla in Lublin in 2013-2015. Secondary lymphedema after 6 months occurred in 19.2% of patients.

Results: Difficulties functioning in daily life due to limitations arising after surgery upper limb occurred in half of the respondents. Limiting the strength of the limb that hinders daily caring activities occurred in 4% of all subjects and making home work difficult at 40%. Reducing the precision movements of the limbs impeding daily activities nursing occurred in 13% of patients and impeding the exercise of precise steps in 9%.

Conclusions:

1. The frequency present difficulties in the daily operation applied to the anticancer treatment is high.
2. The frequency present difficulties in daily functioning is higher in subjects treated with more invasive surgical treatment.

3. The presence of the secondary lymphedema patients experience difficulties with daily activities, especially precise.

Keywords Breast cancer, surgery, self-care, disruption

Introduction

Patients treated for breast cancer also have problems of a different nature than the typical medical because they are self-caring.. The scope of surgical intervention affects the formation of the usual limitations in daily functioning. Restricted mobility of the shoulder joint is a disorder caused pain, scar post-operative fibrosis peri-articular soft tissue and muscle weakness. Another factor affecting the restriction of mobility and reduced power conservation is operated limb on the side of the breast [1]. Surgical treatment of breast cancer currently involves surgery within the breast as well as regional (axillary) lymph nodes. Surgery should be an utter oncologically. Within the chest treatment consists in removing the part of the breast (BCS) or breast amputation - mastectomy (AMP). While within the regional lymph nodes occurs excision of the whole group of lymph nodes (axillary lymph node dissection ALND) or the removal of only a few sentinel lymph nodes (SNLB). A compulsory element conserving therapy is adjuvant to radiation therapy, chemotherapy and hormonal therapy [2,3,4,5]. The occurrence of secondary lymphedema and other symptoms of upper limb may reduce the efficiency of the patient resulting in hindering the daily life and operation of [6,7].
The aim of the study is to present the scope of limitations of everyday functioning in patients treated surgically for breast cancer related to limitations occurring in the limb on the side body of the operated breast. Additionally, the analyzed variables were the type of surgery, the lymphoedema (yes/no) and the scope of intervention in the lymphatic system.

Material and methods

Studied 151 women treated for breast cancer (T_{1-4} N_{0-3} M_0) in the Department of Surgical Oncology at the Oncology Center of the Lublin Region named St. John of Dukla, in Lublin, Poland. The study was conducted in 2013-2015. Tumor stage I (46%), II (42%), III (12%). Breast-conserving surgery was made 50% of women, mastectomy as 50%. Sentinel lymph node biopsy was 59% of women and 41% of lymphadenectomy (ALND). The majority (68%) had no lymph node metastases (N0). Most of the tumors were located in the upper outer quadrant (77%). Examined women lived in southern Poland East, the region of Lublin. The average age of women was 59.3 ± 10.1 years, mean BMI 27.4 ± 5.1 kg/m^2. The increase in the limb (arm or forearm) by 2 cm and was interpreted as secondary lymphedema, occurred in 29 of 151 patients (19.2%). Examined were also subjected induction treatment and adjuvant treatment according to the prevailing procedures. Used according to the statistics evaluation and the qualitative and quantitative analysis was performed (Chi2, Spearman correlation R) based on the Statistica 10.0 PL. Research on bioethical committee agreed and each patient separately.

Results

Difficulties functioning in everyday life due to limitations arising after the procedure limb occurred in half of all patients (50%, n = 75). They restricted the exercise of activities not only precise, but also related to the daily work at home and self-care.

Difficulties associated with everyday functioning and the occurrence of upper extremity lymphedema

All tested difficulties and limitations in daily functioning were more frequent in women with lymphedema. There were statistically significant differences between the reduction in force limbs impeding the exercise of the work at home and the fact of the occurrence of lymphedema ($p < 0.01$), disorders occurs among 36% of those without lymphedema and

among 68% of patients with lymphedema. Significant differences also exist between treatment with lymphoedema and without lymphoedema and the occurrence of a reduced precision of movements hindering the daily care activities and perform high-precision ($p < 0.002$ and $p < 0.02$). The reduced-precision execution disrupted self-are 31% of women with lymphoedema and 9% without lymphoedema, and performing precision operations 21% of women with lymphoedema and 7% without lymphoedema; Table 1, Fugure 1.

Tab. 1 The incidence of restrictions hampering the functioning and appearance of lymphedema

Six months after surgery on the side of the operated breast:	Lymphedema NO		Lymphedema YES		χ^2	p
	n	%	n	%		
Reducing the strength of the limb, hindering:						
Daily activities self-care	4	3%	2	7%	0.80	0.37
Performing works in house	43	35%	18	62%	7.00	0.01
Limiting the range of limb movement, hindering:						
Daily activities self-care	1	1%	1	3%	1.24	0.27
Performing works in house	19	16%	6	21%	0.44	0.51
Reducing the precision movements of the limbs impeding:						
Daily activities self-care	11	9%	9	31%	9.88	<0.002
Making precise actions	8	7%	6	21%	5.56	<0.02

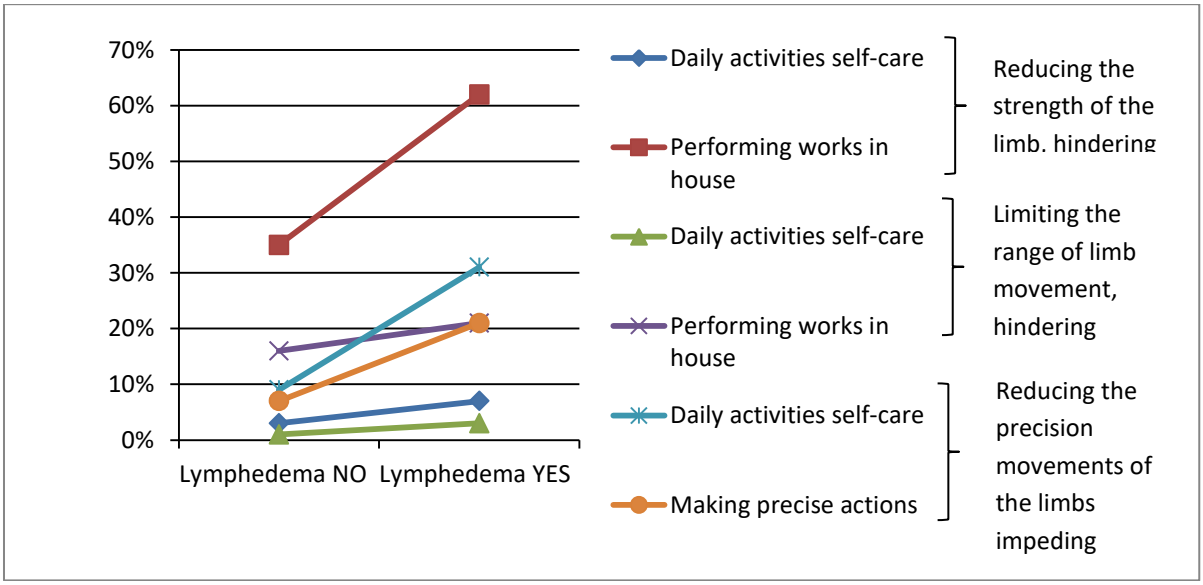

Fig. 1 The percentage of observed changes in the functioning of patients daily and the incidence of lymphedema

Difficulties of daily life and limb disorders in the side of the operated breast and changes in the test circuit of the arm and forearm

Observing a patient after surgical treatment of breast cancer, was evaluated circuits increases within the upper arm and forearm. An increase of 2 centimeters or more were defined as secondary lymphedema. We observed a statistically significant relationship to the existing constraints hindering daily functioning upper limb on the side of the operated breast and changes in circuit forearm, $p < 0.0003$. In case of changes circuits arm dependence it was also positive, but not statistically significant. In each of the analyzed cases were positive for the value of the regression coefficient, which indicates the tendency of prevalence of the limitations daily operation with an increase in the circuit, Figure 2,3.

Fig. 2 The circumference of the **forearm** and the occurrence of limitations hindering daily functioning

R = 0.29 p <0.0003

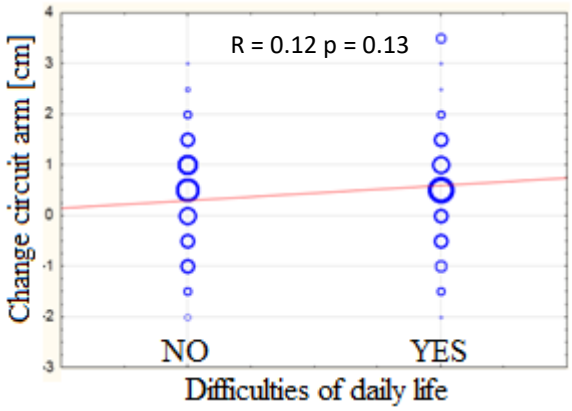

Fig. 3 The circumference of the **arm** and the occurrence of limitations hindering daily functioning

Difficulties of everyday life associated with the functioning of the upper limb and the type of surgery performed

Presented here are the only difficulties in functioning upper limb that did not exist prior to surgery, and their appearance is associated with cancer, surgery and adjuvant used.

Was assessed the impact of surgery performed on an obstacle functioning in everyday life (reduced muscle strength, decreased range of motion and reducing the precision of movements in the upper limb on the operated breast) and disturbances in the limb. Decreasing the limbs impeding daily activities nursing occurred in 4% of all respondents and make it difficult to perform work at home in 40%. Studied patients with undergoing more invasive treatment often experienced difficulties in performing activities of daily treatments ($p = 0.40$) and in carrying out the work at home (statistically significant correlation $p < 0.02$). Limiting the range of motion of limbs impeding daily activities care was reported in 1% of all respondents and make it difficult to perform work at home 17%. Limiting the range of motion limbs impeding the exercise of the work at home more often occurs with increasing the invasiveness of the operation (the relationship was not statistically significant, $p = 0.36$). Reducing the precision movements of the limbs impeding daily activities nursing occurred in 13% of all respondents and perform precise operations in 9%. There was no statistical significant correlation ($p = 0.45$ and $p = 0.22$) relative to the difficulties described with respect to the applied surgical treatment, but it was observed that the most difficulties accompanied by an operation to remove the entire mammary gland and lymph nodes, Table. 2, Figure 4.

Tab. 2 The incidence of restrictions hampering the functioning and the type of surgical intervention used in the breast and the lymph system and a total

After surgery on the side of the operated breast:	Altogether		BCS + SNLB		AMP + SNLB		BCS + ALND		AMP + ALND		χ2	p
	n	%	n	%	n	%	n	%	n	%		
Reducing the strength of the limb, hindering:												
Daily activities self-care	6	4%	2	4%	0	0%	1	4%	3	8%	2.92	0.40
Performing works in house	61	40%	15	28%	12	33%	12	52%	22	56%	9.44	<0.02
Limiting the range of limb movement, hindering:												
Daily activities self-care	2	1%	1	2%	0	0%	0	0%	1	3%	1.38	0.71
Performing works in house	25	17%	5	9%	8	22%	4	17%	8	21%	3.24	0.36
Reducing the precision movements of the limbs impeding:												
Daily activities self-care	20	13%	8	15%	4	11%	1	4%	7	18%	2.64	0.45
Exercise precise actions	14	9%	4	8%	4	11%	0	0%	6	15%	4.42	0.22

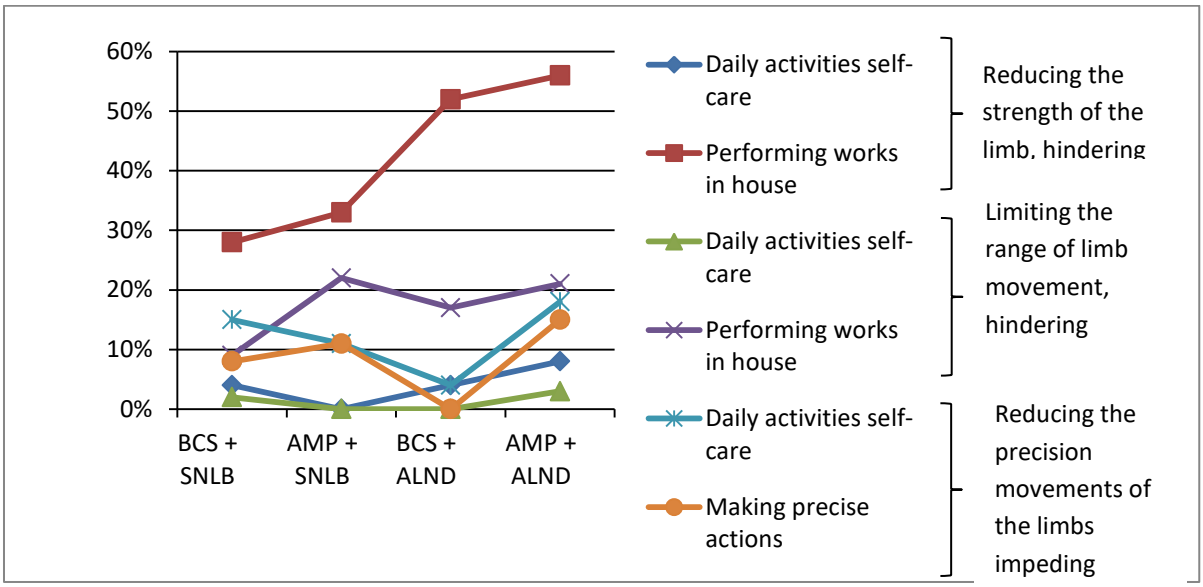

Fig. 4 Percentage of observed changes in the functioning of patients daily depending on the type of operation performed

Difficulties associated with everyday functioning and the number of upper limb removed ALN (axillary lymph nodes)

The influence of the regional scope of interference in the axillary lymphatic system (total number of deleted ALN) with respect to the occurrence of problems in the functionation daily patients. Decreasing the limbs impeding daily activities and care to perform work at home occurred more frequently, the more removed was ALN. Statistical significant relationships observed between the reduction in the force impeding the limb to perform a work at home, both of the number of deleted ALN ($R = 0.22$, $p < 0.01$). The analysis did not indicate the existence of statistically significant relationship between the number of deleted all ALN and restriction of movement limbs impeding daily activities self-care and performing work at home. Range of motion limitations hinder limbs carry out the work in the house appeared the more, the more ALN have been removed, most often occurred after the removal of >10 ALN (25%). Reducing the precision movements of the limbs make it difficult to perform daily activities and self-care of precision operations intensified with the increased number of ALN deleted. The strength of correlations was poor and depending occurring were not statistically significant. Reducing the precision of the limb movements hindering daily activities care occurred in 17% of patients who were removed >10 ALN. Reducing the precision of movement make it difficult to perform precise operations occurred in 11% of patients who removed >10, Table 3, Figure 5.

Tab. 3 The incidence of restrictions hampering the functioning depending on the number of deleted ALN

After surgery on the side of the operated breast:	Number of deleted ALN						Statistic	
	<5		5-10		> 10		R	p
	n	%	n	%	n	%		
Reducing the strength of the limb, hindering:								
Daily activities self-care	2	2%	1	5%	3	8%	0.13	0.12
Performing works in house	30	32%	10	45%	21	58%	0.22	<0.01
Limiting the range of limb movement, hindering								
Daily activities self-care	1	1%	0	0%	1	3%	0.04	0.59
Performing works in house	13	14%	3	14%	9	25%	0.11	0.19
Reducing the precision movements of the limbs impeding:								
Daily activities self-care	12	13%	2	9%	6	17%	0.03	0.73
Exercise precise actions	8	9%	2	9%	4	11%	0.03	0.69

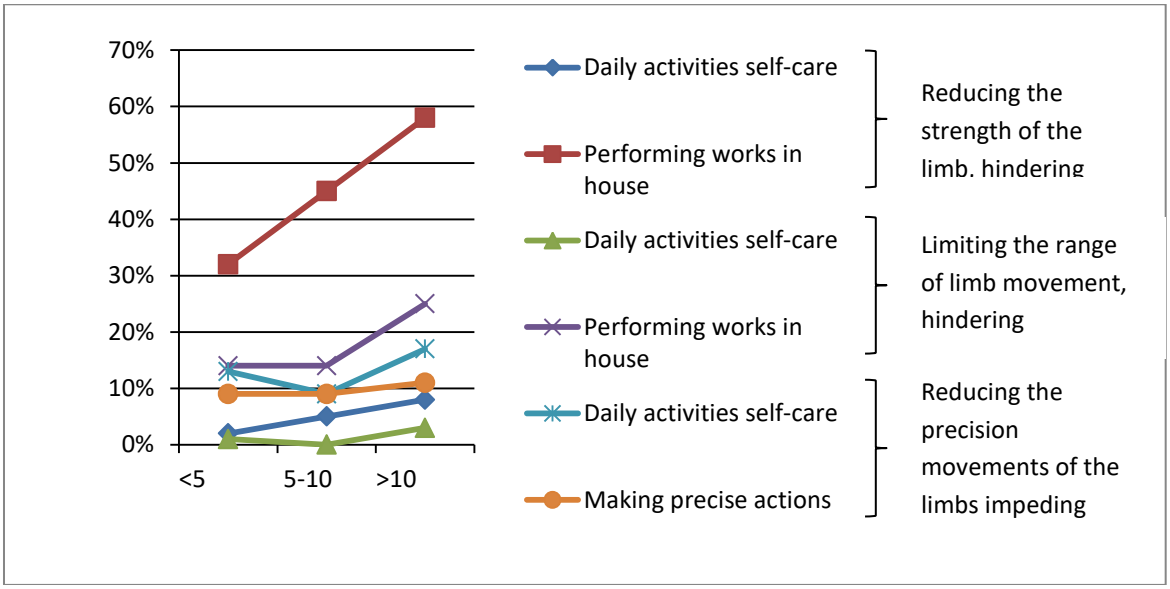

Fig. 5 Percentage of observed changes in the functioning of patients daily depending on the number of deleted ALN

Discussion of the results

Among the patients studied were various dysfunctions and limitations that affect not only the function, but also on quality of life. Their frequency was dependent on many factors. Not all respondents were fully independent, some people (especially the elderly) needed help tutor in everyday functioning. Analyzing the occurrence of various restrictions, it correlated with the type of surgical intervention, also taking into account the number of deleted ALN and the fact lymphedema. It should be added that carried out the analysis of the occurrence of disturbances of patients include only newly established after surgery, thus also included complications of adjuvant therapy.

In our study, a reduction in force hinder limbs carry out the work at home has been observed among 40% of respondents. In the analysis of Schulze T et al. muscle weakness was assessed by attempting to increase the weight of 3 kg, abnormal was found in 16% of patients undergoing SLNB and in 48% of patients undergoing ALND, p <0.04 [8]. In our study, a reduction in force limbs hinder carry out the work at home more often observed along with increased number of deleted ALN (p <0.01). In our material discussed difficulties occurred more often in patients with lymphedema than without (62% vs. 35%), p <0.01. A similar relationship described by Polish researchers, Chachaj A et al. they pointed to the presence of

physical disability among women surgically treated for breast cancer and especially among respondents with lymphedema. The occurrence of edema associated with increased weight and dimensions of the upper limbs, its deformation and consequently its function impaired mobility. This results in a restriction of daily activity [3,9].

In our study, limiting the range of motion of limbs hindering the performance of daily work at home in 17% of all respondents. Wermuth MA et al. observed limit the movement of the upper limb of 8% of a period 2-5 years after surgery [10]. In studies Soares EW et al. it has been identified restrictions on the movement of the arm 24% of patients (mild 15%, moderate and 8% of 1% severe) treated ALND. Schulze T et al. observed that the limitation of movement of the arm is slightly more common among subjects tested SNLB (32%) than ALND (29%), $p = 0.78$ [8]. In our study, type of surgery does not significantly determined the frequency of their occurrence ($p = 0.36$), but there was a trend that difficulties occurred more frequently in subjects after surgery than ALND and AMP SNLB than the BCS, but they are less marked. Similar relationships relative to the restricted mobility of the arm were observed by Soares EW et al., they occur in 34% of patients with AMP and 22% of the BCS, $p = 0.12$. Observed more frequently limit the movement of the arm when the ALND was performed simultaneously with the intervention of the breast (30%) than separately (15%), $p < 0.02$ [11]. Bak M studying women after treatment of breast cancer in Leszno (Poland) observed that after mastectomy are significant limitations of motion in the shoulder joint of the upper limb (less than 50% of normal), the greatest limitation relates to the straightening of the horizontal straightening back, adduction and internal rotation of the limb on the operated side breast [12]. When analyzing the material of its own, no significant statistical relationships of the number of deleted ALN ($p = 0.59$) and the fact of difficulties in performing activities of daily care in relation to limitation of range of motion of limbs. Trends observed that with more removed ALN increased incidence of difficulties related to the work at home caused by limiting the range of motion of the limb. In our own material incidence of lymphedema it did not significantly affect the incidence of these limitations within the daily activities self-care ($p = 0.27$) and work at home ($p = 0.51$), but more often they occurred in patients with lymphedema. Chachaj A et al. observed that women with lymphedema (relative to no lymphedema) is significantly more reduced mobility limb (47% vs. 32%) [3].

Reducing the precision movements of the limbs impeding daily activities self-care occurred in 13% of all respondents and make it difficult to perform precise tasks in 9% of all respondents. Type of surgery does not significantly affect the incidence of difficulties, but more often they occurred to more invasive surgery (especially in the dissection lymph nodes). Also, the number of deleted ALN did not affect significantly the fact that there are difficulties in performing activities of daily care by reducing the precision movements of the limbs. Secondary lymphedema that is associated with significantly higher incidence of these difficulties in the daily self-care and precision movements of the limbs, respectively, $p < 0.002$ and $p < 0.02$.

Our results and other authors have shown frequent occurrence of disorders of the upper limb in women surgically treated for breast cancer. They help to reduce people's ability to function normally, limiting their ability and sometimes requiring a caregiver support [1]. Tertiary prevention should function more efficiently and cover all surgically treated for breast cancer. To counter the limitations recommended to physical rehabilitation. More strictly adhered rehabilitation should include, in particular patients undergoing axillary dissection [13].

Conclusions

1. The frequency present difficulties in the daily operation applied to the anticancer treatment is high.

2. The frequency present difficulties in daily functioning is higher in subjects treated with more invasive surgical treatment.
3. The presence of the secondary lymphedema patients experience difficulties with daily activities, especially precise.

Literature

1. Koper A (red): Pielęgniarstwo Onkologiczne, PZWL, Warszawa 2015
2. Winczura P, Senkus-Konefka E, Jassem J: Polskie i międzynarodowe zalecenia dotyczące leczenia raka piersi, NOWOTWORY Journal of Oncology, 2013, 63 (1), 58–65
3. Chachaj A, Małyszczak K, Lukas J i wsp.: Jakość życia kobiet z obrzękiem limfatycznym kończyny górnej po leczeniu raka piersi. Współczesna Onkologia 2007; 11: 444–448
4. Reanalysis and results after 12 years of follow-up in a randomized clinical trial comparing total mastectomy with lumpectomy with or without irradiation in the treatment of breast cancer.NEngl J Med. 1995; Nov 30, 333, 22: 1456-1461
5. Fisher B, Dignam J, Wolmark N, Mamounas E, et al.: Lumpectomy and radiation therapy for the treatment of intraductal breast cancer: findings from National Surgical Adjuvant Breast and Bowel Project B-17. J ClinOncol 1998; Feb;16, 2: 441-452.
6. Gardas-Skowrońska A, Kułakowski A: Onkologia. Podręcznik dla studentów medycyny, Wydawnictwo Lekarskie PZWL, Warszawa 2003
7. Łuczyk M, Szadowska-Szlachetka Z, Ślusarska B: Standardy i procedury w pielęgniarstwie onkologicznym, PZWL, Warszawa 2017
8. Schulze T, Mucke J, Markwardt J, et al.: Long-Term Morbidity of Patients With Early Breast Cancer After Sentinel Lymph Node Biopsy Compared to Axillary Lymph Node Dissection. Journal of Surgical Oncology 2006; 93:109–119
9. Johansson K, Holmstrom H, Nilsson I, et al.: Breast canser patient's experience of lymphoedema. Scand J Caring Sci 2003; 17: 35-42
10. Warmuth MA, Bowen G, Prosnitz LR, Chu L, Broadwater G, Peterson B, Leight G, Winer EP: Complications of axillary lymph node dissection for carcinoma of the breast: a report based on a patient survey. Cancer 1998; Oct 1;83,7:1362-1368
11. Soares EWS, Nagai HM, Bredt LC, et al.: Morbidity after conventional dissection of axillary lymph nodes in breast cancer patients. World J Surg Oncol 2014; 12; 67: 1-8
12. Bąk M: Ograniczenie ruchomości w stawie barkowym jako następstwo operacyjnego leczenia raka piersi. Annales UMCS Lublin 2005; 60, 16: 21
13. Woźniewski M: [W] Rehabilitacja chorych na raka piersi. J. Kornafel (red.): Rak piersi. Centrum Medyczne Kształcenia Podyplomowego, Warszawa 2011: 165-176