

Śniegowska Wiktoria, Ziolkowska Anna, Wojtczak Pawel, Ciecierska Dominika, Wrzesiński Bartłomiej, Piechocka Edyta. **Physiotherapy of women after mastectomy**. Journal of Education, Health and Sport. 2018;8(7):374-384. eISSN 2391-8306. DOI <http://dx.doi.org/10.5281/zenodo.1319475> <http://ojs.ukw.edu.pl/index.php/johs/article/view/5699>

The journal has had 7 points in Ministry of Science and Higher Education parametric evaluation. Part b item 1223 (26/01/2017).
1223 Journal of Education, Health and Sport eissn 2391-8306 7

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The authors declare that there is no conflict of interests regarding the publication of this paper.

Received: 02.06.2018. Revised: 18.06.2018. Accepted: 23.07.2018.

Physiotherapy of women after mastectomy

**Wiktoria Śniegowska¹, Anna Ziolkowska¹, Paweł Wojtczak¹,
Dominika Ciecierska¹, Bartłomiej Wrzesiński², Edyta Piechocka²**

wiktoria.sniegowska@wp.pl ORCID : 0000-0001-9409-7146

ziolkowska.anna94@gmail.com ORCID : 0000-0002-4068-1133

pawelwojtczak.prv@gmail.com ORCID : 0000-0003-0683-7007

d-cy@wp.pl ORCID : 0000-0001-9420-9451

b.wrzesinski@icloud.com ORCID: 0000-0002-4731-5371

piechockaedyta@gmail.com ORCID : 0000-0002-6321-3236

¹Interdisciplinary Research Club of Geriatrics at the Clinical Geriatry Clinic of University Hospital No. 1 in Bydgoszcz

²Scientific Circle at the Department of Ergonomics and Physiology of Physical Effort Collegium Medicum UMK, Toruń, Bydgoszcz

Abstract

Physiotherapy of patients after mastectomy is a complex process. It includes not only physical exercises, but also other physiotherapy treatments, such as hydrotherapy, physical therapy, massage, kinesiotaping and psychological therapy. The best results brings the early introduction of rehabilitation to the patients, before the procedure, when they learn how to

properly perform exercises, and improve the performance of the muscle pump and prevent blockages by circulatory and respiratory exercises, which are the basis of kinesiotherapy.

Keywords: Mastectomy, rehabilitation, kinesiotherapy

Introduction

Mastectomy – methods of treatment and consequences

Breast cancer is the most common in women in Poland and the second in terms of mortality. The etiology is not fully understood, however, the most often considered cause are older age, genetic conditions, early age of menarche and late menopause, or the late age of the first delivery ended with the birth of a live child. Mastectomy is one of the methods of surgical treatment of breast cancer, and is based on total amputation. In the treatment, the most common are sparing treatments that involve the removal of the tumor with an appropriate margin of healthy tissue, including axillary nodes, or without their excision and mastectomy. Medicine has evolved significantly in recent years. In the 80s / 90s of twentieth century women underwent total amputations, but over time, modified radical mastectomy and simple mastectomy began to be used. Regardless of the treatment method, patients should also receive adjuvant therapy in the form of chemotherapy, hormone therapy or radiotherapy.

Breast cancer treatment has many negative effects. The problem concerns both physical (amputation) and psychological spheres. In addition to aesthetic values, it is necessary to deal with fear of death, difficulties arising from the professional sphere and acceptance and the help from the family. It happens that the current work cannot be continued due to too high physical loads. After mastectomy, the patient's mind should be redirected so that she can accept her chronic illness and return to her current family and professional life. The effects of traumatic situations manifest in life in two ways. In one group of people, there is isolation, while in others there is excessive excitement and extroversion. Both in the first and in the second case, everything is intertwined with fear, anger, hope and despair. One of the most common complications, according to psychiatrists, is depression. This condition seems to be a completely normal phenomenon in such a difficult experience, hence there are huge problems in diagnostics. This is called "Masked depression". Another troublesome phenomenon is experiencing anxiety, replacing sleep over the course of time and everyday activities. Fear of something is an alarm signal for the human body, so it has a positive overtone. Chronic fear, however, can lead to phobias and anxiety attacks. Characteristic symptoms include: irritability, loss of appetite, problems with sleep, concentration, as well as sweating and shortness of breath.

Prolonged staying in one position, and in this case in a lying position (just after the procedure) leads to muscular atrophy and a decrease in cardiorespiratory fitness. Patients are exposed to thrombosis and respiratory failure, which is why it is very important to introduce rehabilitation as early as possible. After surgical removal of the breast, the scar becomes the problem. Due to the individual nature of the procedure, its size varies, but it always brings pain and a problem with the movements in its vicinity. Postoperative adhesions may also be expected and an increased mobility limit may be additionally increased. Deep scars can contribute to the tension of the fasciocomial system, which may be associated with the long-term occurrence of pain even in much further located tissues. There is often a limitation of mobility in the shoulder joint and blade-bone system or in the armpit area. Patients reflexively, in fear of pain, place the upper limb in the position of attachment. Patients subjected to mastectomy very often experience the consequences of treatment until the end of their lives. One of the most visible effects is lymphedema, resulting after the excision of axillary nodes. You should also bear in mind the effects of adjuvant therapy, its task is to help the patient return to the highest possible efficiency, but it can contribute to the occurrence of fibrosis and difficult collateral run-off, which often occurs after radiotherapy.

Depending on the area undergoing surgery, the time of recovery and adaptation to the new conditions is different. After subtracting the breast, the weight of the woman decreases and her image changes, which is particularly evident in women with large breasts. It involves many negative effects, such as the position of the shoulders at various levels, curvature of the spine, the outflow of the scapula, or deepened thoracic kyphosis in the case of bilateral resection. The correction of posture and the necessity to choose the right orthopedic supply become an indispensable part of the therapy.

After mastectomy, the most characteristic effect is lymphoedema. It comes to him at the time of accumulation of water, glycosaminoglycans, proteins, cells and their breakdown products. Excess tissue fluid accumulates in the way of peripheral lymph flow. Often due to the structure of the lymphatic system (functional reserve) it does not appear immediately after the injury or surgery. It is only possible to observe the progressive fibrosis of this area and the overload of other-functioning vessels of the above-mentioned system. Absorption swelling, regardless of the cause, is a serious problem. The risk of lymphoedema in women after mastectomy increases. This applies mainly to situations in which it is necessary to dissect lymph nodes and apply radiation therapy. The determinant is often the extent of damage and the degree of efficiency of the reserve. Factors that usually increase the formation of swelling are: tiredness, overheating of the limb (bathing, sunbathing, heat treatments), saunas, using too tight

clothing, jewellery, cuts, injuries, injections, or cuff from the blood pressure monitor. In oncological patients, the occurrence of lymphoedema is different. Sometimes it appears just after surgery, and other times, according to statistics within a dozen months after oncological treatment. After complete resection of the axillary nodes, the occurrence of swelling concerns about 20% of patients. When the doctor decides to cut one or two lymph nodes, the risk of edema drops to just a few percent. When it does not appear immediately after the procedure, the most common initiating cause is a wound or infection on the hands. Literature also provides cases in which the appearance of swelling after radical mastectomy occurs after 30 years. It is believed that lymphedema may also suggest a recurrence of the disease, which is why it is important to conduct research that excludes the cancer process.

Physiotherapy

Rehabilitation is an indispensable part of oncological treatment. Regardless of the disease entity, it should include elements of kinesiotherapy, physical therapy and psychotherapy. In planning physiotherapy in women after mastectomy, one should be guided by individuality. All exercises and treatments should be appropriately adjusted to the patient's condition and predisposition. The basic method of fighting against lymphoedema is the so-called comprehensive thrombosis therapy (CDT). It includes: manual lymphatic drainage (MLD), multilayered bandaging, exercises to improve lymph drainage and skin care. Apart from these techniques, good supplementary effects such as pneumatic massage or kinesiotaping also bring good effects in combating the problem.

In compression therapy, there are two types of compression means, i.e. bandages and ready-to-use compression materials in the form of sleeves, stockings and knee-length socks. In the case of oncological patients, due to the large variety and rapidly progressing changes in the circumferences of the limbs, almost no ready-made materials are used. Bandages turn out to be more practical. These dressings can stay on the limb about 20-24 hours. At the beginning of treatment, weaker pressures and shorter dressings may be used.

Kinesiotherapy

Kinesiotherapy includes exercises to help drain the lymph, as well as control posture and balance, because the removal of the breast is associated with a large disorder of body statics. Among the techniques used to reduce these problems are: myofascial relaxation techniques, muscular energy, positional loosening and some PNF techniques. In women after mastectomy, conducting exercises must be carried out in such a way as to involve all necessary muscle

groups for work. For this purpose, active, assisted, isometric exercises, exercises of the upper and lower limbs, chest, back, neck and abdominal muscles as well as breathing exercises (diaphragmatic and rib cell) are used. The most important movements concern the fingers of the hands, because their movement allows to improve the functioning of the muscle pump and push the lymph into the vessels in the direction of the head. Kinesiotherapy should be implemented before surgery, to prevent cardio-respiratory complications, congestion, scarring, limitation in the joints of the upper limb directly affected. It is also necessary to teach the patient exercises performed after the procedure, and these are: circulatory exercises of the hand and foot joints, circulatory exercises of the wrist and ankles, breathing exercises, effective coughing exercises, active upright exercises, sitting in a wheelchair, taking the first steps, self-service activities . It's best to do every exercise every two hours for 10 minutes, repeating every move 5 to 10 times. In the breaks between exercises, it is recommended to shake the hand (relaxation) and the verticalization, depending on the general condition of the patient, from the second day. When planning a rehabilitation, its basic goals must be taken into account. Exercises should be based on dynamic, not static muscle work, because this increases the work of the muscle pump and the outflow of blood and lymph (preventing edema). After mastectomy, active exercises in the appropriate starting positions are the most effective. In the case of upper limb exercises, it is usually a sitting or standing position, and in general development exercises a lying position. In justified cases, it is recommended to use passive exercises (contractures).

Manual lymphatic drainage (MDL) is a form of treatment that uses specialized techniques to remove edema. The characteristic element for MDL is the place of beginning, which despite appearances does not start on the periphery, where mainly swelling accumulates, and in central places to prepare the lymphatic system. This procedure allows the activation of large lymphatic vessels. The lower floors of the lymphatic system are stimulated to produce lymph. In patients with lymphatic insufficiency, classical massage cannot be used because it causes severe hyperemia, which is not recommended when swelling is present. As part of the anti-edema therapy, lymphatic drainage is used, which differs significantly from classical massage. It is a delicate and slow combination of movements whose task is to increase the activity of the lymphatic system. All techniques in lymphatic drainage must be performed in accordance with the specific order and characteristic for this massage.

Another element of comprehensive draining therapy is pneumatic lymphatic drainage. Special equipment is needed for its implementation, including cuffs that fill the air at the right time. The amount of pressure is strictly adjusted to the patient's edema. It is recommended that the highest pressure be in the distal parts and lower in the proximal. The international consensus

on the treatment of lymphoedema indicates that the duration should be in the range of 30-120 minutes. Positive results are achieved by applying mechanical pressure once a day, 5-6 times a week. The time of therapy depends on the severity of edema. The most common method for the "hard" edema is 150-160 mmHg. At the "soft" swelling, these values are 90-100 mmHg. In pneumatic compression, it is recommended to use pressures lower than the systolic pressure, and higher than those for diastolic patients.

The mobilization of scars after mastectomy is mainly carried out using the rolling technique (static and dynamic). Static rolling consists in catching a skinfold along with the subcutaneous tissue, performing a vertical traction and moving to the most limited side. Dynamic rolling is done similarly, however, instead of shifting the folds, it should be pushed with thumbs using horizontal traction. Soft tissue therapy also involves stretching scars (up to the edge of pain), however, an important information for the therapist is the possibility of taking the procedure only after healing the wound. Doing so protects against the occurrence of hypertrophy.

Pneumatic vacuum massage is performed using devices of various construction. The apparatus has the ability to create a negative pressure of 0-60 kPa, it is supplied from 220 V mains; 50Hz. It consists of transparent, cup-shaped suckers of various sizes, which are applied to the limb previously lubricated with a lubricant. Massage with such a device is performed manually in a reciprocal-circular motion, closing and opening the opening in the suction nozzle with your finger. The treatment time usually varies between 5-20 minutes.

Vibrating massage is one of the most widespread therapy tools in the modern era. Special devices are used with the possibility of choosing the frequency of vibrations, mainly of 50 and 100 Hz with various shape caps.

In order to improve the flow of lymph, patients after mastectomy are advised to **self-massage**. Medical staff should adequately train patients in the field of hygiene, daily activities and precisely exercises and anti-edematous prophylaxis. Positive results are also provided by aqua aerobic classes, which not only improve the range of movements in the joints of the operated limb, but also constitute excellent social skills training. Ladies, participating in group activities, get rid of all complexes, make new friendships and become more joyful. Classes become an active form of spending free time, thus improving the physical and mental fitness of the patients.

The partial limb bath of the operated side is performed to reduce muscle tone. It is most often used after 3-4 weeks of ambulatory rehabilitation or during chemotherapy, when the tension of venous and lymphatic vessels appears. This treatment is complementary therapy and

lasts from 10 to 20 minutes (minimum water temperature is 34 ° C, and max. 37 ° C), their frequency varies in series of 6 to 15 baths, performed daily or every other day .

Underwater spraying is carried out in a water environment, using a specialized apparatus consisting of a pump, by means of which water is drawn from the basin (pressure generated: 152-304 kPa; 1.5-3 atm.), compressor and heating system (water temperature approx. 36 ° C, water temperature from the stream: 37-39 ° C). The patient lies in the tub with his head placed on a special support. This type of massage is mainly performed in patients after reconstruction, to reduce the tension of the skin and muscle tissues. **Massage with the Aquavibron** apparatus is performed with a special head, equipped with various rubber tips. Water is supplied to the head, which, flowing through the nozzle, vibrates the rubber tip. The nature of vibrations depends on the type of tip used and the amount and pressure of water. The vibration is transmitted to the tissues located deeper by moving the head over the patient's skin. The use of physical therapy after mastectomy is still a subject of much controversy. Only in some cases doctors decide to recommend these patients to their treatments, which are primarily: galvanization (used in conditions of sensory disorders), **diadynamic or interference currents** - analgesic, iodine iontophoresis (iodine ions penetrating the skin soften the scar), electro stimulation (reduces lymphoedema by activating the muscle pump thanks to alternate contractions of the forearm and arm muscles) - Lympha Vision (the international name "bodyflow") is used for this procedure using low frequency currents, and triangular pulses are generated that stimulate the lymphatic vessels as well as skeletal muscles, using higher frequencies, thus improving the muscle pump performance.

Other physiotherapeutic treatments: **biostimulation laser** (used 3 times a week stimulates lymphangiometry and the process of creating new lymphatic paths, reduces fibrosis in the swollen edema, **deep oscillation** using the Hivamat 200-device consists in generating vibrations involving an electric field. **TENS**, which is a very safe method of treatment, is rarely noticeable side effects in its application. The best results can be seen after percutaneous electrical nerve stimulation in the group of patients with breast and bone cancer.

Kinesiotaping is used in physiotherapy as a separate therapeutic method or complementary therapy. It involves the use of special patches, supporting the return of areas subject to dysfunction for proper functioning. Depending on the therapeutic options, several application methods are distinguished. Different methods occur in mastectomy, with lymph nodes preserved, without them, and also after bilateral mastectomy without the maintenance of thoracic axillary nodes.

In the pre-operative period, it is important to present the following information to patients: read the principles of physiotherapy after surgery, learn the appropriate exercises and self-massage, learn about the principles of breast prostheses selection, familiarize yourself with the principles of anti-swelling prophylaxis

In the postoperative period: choose and introduce kinesitherapy and perform lymphatic drainage.

Patients are advised to take a semi-sitting position, raise the operated limb to an angle of 45 °, which prevents the formation of edema, exercise breathing and deep cough. Physiotherapy begins a few hours after the procedure and boils down to the simplest exercises of the operated limb, ie bending and straightening the fingers, movements in the elbow and radial-cubital distal joint, self-assisted shoulder exercises (sagittal plane at flexion of the elbow joint) and relaxing exercises. The verticalization also begins on the first day, but with the assistance of a nurse. In the second day, in addition to the above-mentioned exercises, active exercises of the shoulder joint with an upright elbow joint (sagittal plane) are introduced. In the third day, harder exercises are performed, including intermediate planes between the fibular and frontal joints and different positioning of the elbow joint. Exercises should be performed symmetrically with the bent hip and knee joints, in order to better stabilize the position and eliminate (decrease) the lumbar spine synkinesis. Days 4-6, which are the second stage of early post-mastectomy physiotherapy, includes active exercises in various planes, preferably in a sitting position. The third stage (days 7-9) are self-assisted exercises with a gymnastic stick in various planes. This time should also be used for exercises in a standing position, light neck exercises and massage of the operated limb (omitting the area after the procedure). The main goal of hospital rehabilitation is to increase the mobility of the shoulder joint, improve muscle strength, prevent lymph stasis in the tissues and help in accepting changes. After leaving the hospital, the patients still have to remember about proper rehabilitation. It is recommended to continue the exercises from the hospital period, initially exercises in unloading in the outpatient system, and then the active free exercises, including the accessories. Patients after mastectomy may be referred for sanatorium treatment only one year after the end of treatment. It is very beneficial due to the climate, the ability to detach from everyday life and conduct uninterrupted comprehensive therapy, and also brings many benefits due to co-morbidities, i.e. rheumatism.

Summary

Rehabilitation during oncological treatment is a very important and difficult challenge. A good physiotherapist should know how to conduct exercises and influence the psyche and improve the general condition of the patient. The most important in therapy is the complexity and cooperation of all medical personnel.

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