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Physiotherapeutic performance in mastectomy after breast cancer: a literature review

Abstract

Breast Cancer is the second most common type of cancer, and the leading cause of cancer death in women. Among the treatments is the mastectomy, bringing negative physical and psychological consequences in the lives of these women, significantly reducing their quality of life.

Objective: To verify the physiotherapeutic procedures most used in postoperative breast after mastectomy surgery.

Methods: Literature review between 2007 and 2017, through consultation of national and international scientific articles in the following databases: Google Academic, lilacs, medline, Pubmed and Scielo, taking into account the key words: physiotherapy, cancer Of breast, mastectomy, mamoplasty, quality of life.

Results: 18 articles were identified in which the following modalities were identified: Complex Decongestive Therapy (CDT), Manual lymphatic drainage, Kinesioterapia, Low power laser, Ultrasound, Pneumatic compression, Manual therapy, Kinesio Taping and High voltage electrical stimulation.

Conclusion: CDT is the most used and effective technique, however, combining several techniques leads to a more complete, globalized and efficient treatment, showing that physiotherapy is essential in all phases of treatment, significantly improving the quality of Life of the mastectomized woman.

Keywords: physiotherapy, breast cancer, mastectomy, mammoplasty, quality of life

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Introduction

Cancer is characterized by disorganized and chaotic cell growth that results from genetic changes inherited or acquired by the action of certain environmental, chemical, radioactive, viral and hormonal agents named carcinogens, which thereby initiate the process of tumorigenesis.[1] Breast cancer is the second most common form of cancer in the world and the leading cause of death by cancer among females. It mainly affects women aged between 40 and 60 years.[1,2] The main risk factors are genetics and external, such as environment, living habits, eating habits, age, menarche, exposure to estrogen, radiation, obesity, sedentarism and environmental toxins.[1,2]

According to the World Health Organization (WHO), about 40% of deaths could be prevented by eliminating or minimizing exposure to carcinogens. Primary prevention consists in promoting health and avoiding external risk factors. Secondary prevention involves actions aimed at early diagnosis of the disease. The main objectives of treatments are to cure, prolong survival and improve the quality of life (QoL) of patients.[1] Primary treatment for breast neoplasm is a surgical intervention called mastectomy, whose goal is tumor removal. The most commonly used surgical procedure is modified radical mastectomy, in which the entire breast is removed, along with axillary lymph nodes.[1,3,4] After mastectomy, women face a psychological trauma. These feelings lead them to explore the possibilities of breast reconstruction, in order to reconstitute their body image, with improvements to QoL and well-being, so it should be considered as an integral part of breast cancer treatment.[5]

Treatment-associated morbidities include paresthesia of the axillary region and the lateral wall of the thorax, pain, enlargement of upper limb, reduction of shoulder's range of motion, limitation of daily living activities (DLAs), and interference in QoL.[6] Patients undergoing physical therapy have their recovery time reduced and return more quickly to their daily, occupational and sports activities, as well as can reacquire movement amplitude, strength, good posture, coordination, self-esteem and, mainly, minimize possible postoperative complications and increase their QoL.[3] In the preoperative phase, the work of musculature maintenance is important, besides a previous evaluation of the patient's overall conditions. The post-surgical treatment aims at a significant improvement in skin texture, absence of fibrotic nodulation, reduction of edema, pain relief, minimization of possible tissue adhesions, rapid recovery of areas with hypoesthesia, that is, less of complications and acceleration of patient's return to daily activities.[7,8]

The main physical therapy resources used to achieve that, are: manual lymphatic drainage, ultrasound, cryotherapy, laser therapy, electrotherapy, active exercises and complex decongestive therapy (CDT), which is fundamental to the recovery process.[7] Because of the high incidence of breast cancer, and the search for a treatment that ranges from tumor removal surgery to breast reconstruction

surgery focusing on significant improvement in QoL, there is a need to verify the most used physical therapy procedures in mastectomy post-operative period.

Methods

Literature review was carried out in Scholar Google, LILACS, MEDLINE, PubMed and SciELO databases, in search for publications written in Brazilian Portuguese, English and Spanish languages and published from 2007 to 2017, using the following keywords in both Brazilian Portuguese and in English: physiotherapy, breast cancer, mastectomy, mammoplasty, quality of life, Our search included studies describing the most frequent physical therapy interventions after mastectomy in breast cancer which had been written in Brazilian Portuguese, English or Spanish.

Results

After the full reading of the articles found, we selected the ones meeting the inclusion criteria. When selecting and analyzing the material, a table was drawn up with the following information of studies: author, year, journal, journal impact factor, study's objectives, procedures and results. Eighteen articles describing the most frequent physical therapy modalities after mastectomy surgery were selected (Table 1).

Table 1 List of studies per title, author, year of publication, journal, impact factor, study objective, procedures and results

Paper	Author, year, journal, impact factor	Objective	Procedures	Results
"Analysis of the effects of manual lymphatic drainage in the treatment of postmastectomy lymphedema"	Marques et al., 2015[9] Rev Saúde & Ciência em Ação, B1	To verify the effects of manual lymphatic drainage in the treatment of postmastectomy lymphedema	Literature review	Manual lymphatic drainage is effective in the treatment of lymphedema and, when associated with other techniques such as complex decongestive therapy, produces better results
"Decongestive physical therapy in lymphedema of the upper limbs after postmastectomy: a retrospective study"	Tacani et al., 2013[10] Revista Brasileira de Ciências da Saúde, B4	To evaluate the effects of complex decongestant therapy on upper limb lymphedema in late postoperative breast cancer patients	Retrospective study of 44 medical charts evaluating pain, perimetry, volume and sensitivity	Reduction of lymphedema and other symptoms such as pain and altered sensitivity were observed after complex decongestive therapy
"Physiotherapeutic care in the control of lymphedema secondary to the treatment of breast cancer: routine at the Hospital do Câncer III / Instituto Nacional de Câncer"	Fabro et al., 2016[11] Rev Bras Mastologia, B3	To report actions adopted in the Physical Therapy Service of Hospital do Câncer III, in patients submitted to treatment for breast cancer	Descriptive analysis	Treatment at Hospital do Câncer III involves the combination of external compression (compression bandaging or use of compressive meshes), active kinesiotherapy and skin care
"The use of kinesiotherapy in the postoperative period of plastic surgery"	Silva et al., 2013[12] Ter Man, B2	To suggest kinesiotherapy approach for the postoperative period of esthetic plastic surgeries	Systematic review	- inflammatory phase: stretching and relaxation of musculature, breathing exercises; - proliferative phase: sensorial stimulation, passive movement; - remodeling phase: active movement of the glenohumeral joint
"Influences of physical exercise on quality of life in two groups of patients with breast cancer"	Castro Filha et al., 2016[13] Rev Bras Ciênc Esporte, B1	To investigate the relationship between physical exercise and its effects on the quality of life of patients with breast cancer, post-surgery (six months)	24 women, divided into 2 groups (control and experimental) (most resisted aerobic exercises), 3 times a week, for 10 weeks	The practice of physical exercise after surgery contributes to the improvement of psychological, social and physical aspects
"Ultrasound therapy and transcutaneous electrical neuromuscular stimulation for management of postmastectomy upper limb lymphedema"	Sousa et al., 2014[14] Acta Fisiátr, B3	To evaluate the effects of transcutaneous electrical stimulation or ultrasound therapy in the treatment of upper limb lymphedema after mastectomy	Literature review (1980-2012)	Little improvement was observed when it comes to pain reduction or quality. Only the study using ultrasound therapy identified small reduction in symptoms
"Analysis of physical therapy techniques used in patients undergoing mastectomy: an integrative review"	Lira et al., 2016[15] ConScientia e Saúde, B2	To identify the features mostly used and their most significant results in the recovery of mastectomized patients	Literature review	The studies showed the important role of physical therapy to prevent complications and improve or maintain functionality and quality of life. Kinesiotherapy was the most used resource

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Table Continued...

Paper	Author, year, journal, impact factor	Objective	Procedures	Results
"Myofascial release in patients with mastectomy"	Nardi et al., 2014[16] Fisioterapia Brasil, B3	To review the literature as for the effects of myofascial release on the pain of mastectomized patients	Literature review (2001-2012)	The method is efficient to improve myofascial pain reported in the postoperative period of mastectomy
"Effects of manual therapy techniques on pain management in postmastectomized patients: systematic review"	Basilio et al., 2014[17] Manual Therapy, Posturology & Rehabilitation Journal, B1	To verify the effects of manual therapy in patients after mastectomy surgery	Systematic review (2009-2013)	Manual therapy techniques bring significant results in the relief of muscular pain
"Efficacy of pneumatic compression and low-level laser therapy in the treatment of postmastectomy lymphoedema: a randomized controlled trial"	Kozanoglu et al., 2009[18] Clin Rehabil, A1	To compare the long-term efficacy of pneumatic compression and lowpower laser therapy in the treatment of postmastectomy lymphedema	Patients were allocated to group I (2 hours of pneumatic compression therapy, totaling 20 sessions for 4 weeks) and group II (20 minutes of low power laser therapy, totaling 12 sessions for 4 weeks)	Both interventions had positive effects, but the improvement observed in the group treated with laser was more significant after 12 months (in the long term)
"Physical therapy resources in postmastectomy lymphedema: a literature review"	Luz e Lima, 2011[19] Fisioter Mov, B2	To identify and evaluate the benefits of physical therapy resources in the treatment and prevention of postmastectomy lymphedema	Literature review	Physical therapy remains the most efficient choice to treat lymphedema, as it not only improves, but also maintains the functionality of lymphatic circulation, in addition to preventing relapses of infections
"Effects of Kinesio taping on lymphatic edema"	Pivetta et al., 2017[20] Fisioterapia Brasil, B3	Investigating the effects of Kinesio taping on lymphatic edema	Document exploratory research with quantitative approach	Significant reduction of lymphedema in the groups that used Kinesio taping, both alone and associated with other techniques
"Effectiveness of a self-administered, home-based exercise rehabilitation program for women following a modified radical mastectomy and axillary node dissection: a preliminary study"	Kilgour et al., 2008[21] Breast Cancer Res Treat, A1	To evaluate the efficacy of a home exercise program, by means of video lessons, on the rehabilitation of shoulder mobility after radical mastectomy	27 women randomly allocated in two groups and following a home rehabilitation program (11 days), with flexibility and stretching exercises	Significant increase in shoulder flexion, abduction, external rotation and grip strength
"Effects of high voltage electrical stimulation on lymphedema after bilateral mastectomy: a case study"	Garcia et al., 2007[22] Fisioter Pesq, B2	To analyze the effects of high voltage pulsed electrical stimulation on upper limb lymphedema in patients submitted to bilateral mastectomy	The treatment consisted of electrical stimulation for 20 minutes, during 7 weeks, totalizing 14 sessions. The evolution of treated limbs was analyzed by perimetry and volumetry, comparing the first and the fourteenth sessions	Significant reduction in lymphedema, improvement in overall picture related to increased mobility and decreased sensation of weight
"Lymphedema after breast cancer: comparison of two physical therapy techniques - pilot study"	Leal et al., 2011[23] Fisioter Mov, B2	To compare the effects of complex decongestive therapy with a protocol that includes electrical stimulation, therapeutic exercises and use of the elastic clamp aimed at reducing lymphedema	Two groups submitted to different therapeutic protocols, complex decongestive therapy and electrical stimulation twice a week for seven weeks	Both the complex decongestive therapy and the protocol with electrical stimulation were not effective to reduce residual lymphedema secondary to axillary lymph node dissection. However, they provided for the maintenance of measures evaluated

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Table Continued...

Paper	Author, year, journal, impact factor	Objective	Procedures	Results
"Efficacy of complete decongestive therapy and manual lymphatic drainage on treatment related lymphedema in breast cancer"	Koul et al., 2007[24] Int J Radiat Oncol Biol Phys, A1	To evaluate the results of complex decongestive and MLD therapy in patients with breast cancer-related lymphedema	Patients were divided according to treatment modalities; complex decongestive therapy (55%), MLD (32%) and home exercise program (13%).	Complex decongestive therapy and MLD associated with exercise caused significant reduction in lymphedema volume
"Physiotherapeutic treatments for lymphedema after breast cancer surgery: a literature review"	Leal et al., 2009[25] Rev Latino-Am Enfermagem, A1	To present the modalities of physical therapy applied in the treatment of lymphedema	Literature review	Results are better when the techniques are associated. Decongestive therapy is the most widely used protocol
"Physiotherapy for the treatment of lymphedema in the postoperative period of mastectomy: literature review"	Pacheco et al., 2011[26] Rev Fac Ciênc Méd Sorocaba, B5	To verify the importance of physical therapy in the reduction of lymphedema after surgical treatment of breast cancer	Bibliography review	Physical therapy is important at all stages of treatment. However, the best results are achieved when there is early intervention by the physical therapy team

Discussion

Breast cancer is the second most common cancer worldwide. About 22% of new cases are accounted each year, corresponding to a significant number of deaths among adult women.[2,27] In Brazil, cancer is considered a serious public health problem due to gradual increase in incidence and mortality.[28] Concomitant to medical treatment, a multidisciplinary approach is required, considering not only pathological conditions, but also physical, psychological, social and professional rehabilitation, aiming at maintaining and improving the QoL of patients. Hence, physical therapy plays a fundamental role in this stage of treatment for mastectomized women, since it can help in early functional recovery and in the prophylaxis of sequelae, in addition to reducing recovery time, thus collaborating with women's reintegration into society without functional limitations.[3] After surgery, the patient may present, among other complications, upper limb lymphedema. Signs and symptoms associated with lymphedema are: increased limb diameter, tightening of the skin, stiffness, decreased motion range, sensory disturbances and impairment of functional tasks.[25]

Marques et al.,[9] reported the importance of manual lymphatic drainage (MLD) in the treatment of lymphedema, resulting in its reduction, improvement of sensitivity and range of motion, and reduction of cicatricial adhesions, providing an improvement in the patient's QoL. It has been proven effective and, when associated with other techniques such as CDT, achieved better results. Reduction of lymphedema observed by Tacani et al.,[10] was due to the use of CDT, which consists of combined use of MLD, skin care, compression bandaging, kinesiotherapy and selfmassage. When supplemented by manual techniques, vacuotherapy, transcutaneous electrical nerve stimulation (TENS), and adapted therapeutic exercises, it also improved cicatricial adhesions. Brito et al.,[29] highlighted that, in most treatment programs, lymphedema treatment is based on CDT. Kinesio taping has been used as an innovative resource in the treatment of lymphedema, as it can drain body fluids. Pivetta et al.,[20] reported a significant reduction of lymphedema in groups that used Kinesio taping either alone or in association with other techniques. High-voltage stimulation may increase venous blood flow and edema absorption, since negative polarity has sufficient intensity to provide muscle contractions, producing a pump effect in lymphatic flow.[22,23]

A study by Garcia et al.[22], using high-voltage stimulation, showed significant reduction in lymphedema, as well as reports by the volunteers of improvement in their overall picture when it comes to increased mobility and decreased weight sensation. Mastectomized patients should be encouraged to maintain unrestricted exercise, performing resistance training with fewer repetitions and lower load on the affected limb, or with lymphedema. Associating exercises with relaxation techniques, to provide patients with both physical and emotional improvement, brings benefits to treatment of lymphedema.[29] Practicing physical exercise during cancer treatment has contributed with improvements in psychological, social and physical aspects of patients; however, it is important to consider which exercises can be performed by this public.[13] The knowledge about benefits of physical therapy and the resources offered by the physical therapist is still limited, especially when it comes to the preoperative period, since Flores et al.,[30] verified that the frequency of referrals of patients by plastic surgeons to physical therapists was 40 and 90% in the pre- and postoperative periods, respectively. Pacheco et al.,[26] emphasized the importance of physical therapy in all recovery phases of mastectomized women. However, the best results occur when there is early intervention by the physical therapy team.

In conclusion, CDT was proven the most used and efficient technique. However, combining several techniques leads to a more complete, global and efficient treatment, thus showing that physical therapy is essential in all phases of treatment, that is, in the preoperative and postoperative periods, significantly improving the QoL of mastectomized women.

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Conflicts of interest

Authors declare that there is no conflict of interest.

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