Effects of manual therapy techniques in the treatment of pain in post mastectomy patients: systematic review.

Efeitos das técnicas de terapia manual no tratamento da dor em pacientes pós mastectomizadas: revisão sistemática.

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Abstract
Introduction: Cancer is now the third leading cause of death in the world, surpassed only by cardiovascular accidents and deaths by external causes, among them stands mammary carcinoma. Mastectomy is in a procedure consisting of invasive breast removal due to some anatomical and functional changes previously diagnosed. With the growth of the disease and its high content in increasingly young women, Manual Therapy has been used as a new form of treatment. Objective: To show the effects of manual therapy in patients after mastectomy surgery. Method: This is a systematic review in which secondary and tertiary sources were used, and the databases PubMed, Medline, Lilacs and SciELO were used. It was adopted as inclusion criteria studies classified as: a randomized controlled trial, with publication period between 2009 and 2013. Were used as search terms: "Mastectomy", "Neck", "Shoulder Pain", "Musculoskeletal Manipulations" and "Functionality". Results: Among the 37 initially selected by electronic search in the databases of articles, 25 were excluded for the title did not meet the inclusion criteria. Of the 12 retained studies, 5 were excluded for duplicity. Seven studies were selected for a more thorough analysis through summary, 2 of them being excluded. The remaining 5 articles were evaluated from reading the text. It can be seen that the manual therapy techniques have significant results in the alleviation of muscle pain in patients submitted to surgery mastectomy. Conclusion: It can be seen that the manual therapy techniques have significant results in the alleviation of muscle pain in patients undergoing the mastectomy surgery. However, there is still a lack of studies of type randomized controlled trial on the effects of manual therapy in patients in the post-operative period of mastectomy.

Keywords: Mastectomy; Neck, Musculoskeletal Manipulations

Resumo

Palavras-chave: Mastectomia; Cervicalgia; Manipulações Musculoesqueléticas

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INTRODUCTION
Cancer is now the third leading cause of death in the world, surpassed only by cardiovascular accidents and deaths by external causes, among them stands mammmary carcinoma. Relatively rare before age 35, above this age group the incidence is growing fast and steadily, but the statistics indicate both increasing incidence in developed countries as in developing. According to estimates, in Brazil, 49,240 new cases of breast cancer are registered and the most common among women and accounting for 22% of new cases each year, with relatively good prognosis in cases where takes place the proper treatment. Mortality rates remain high, with a value of 11,860, with 11,735 women and 125 men, most likely because the disease is still diagnosed in advanced stages.¹

Among the methods of therapeutic surgery is highlighted, and the greater the delay, the greater the likelihood of postoperative complications.² Surgical treatment ranges from lumpectomy to mastectomy, with or without removal of axillary lymph nodes. Axillary lymphadenectomy (AL) is most often used for disease staging, guidance on the criteria of choice of adjuvant therapy and prognosis. Additionally, there may be employed adjuvant and/or neoadjuvant chemotherapy (CT) manner, radiotherapy (RT), and hormone therapy.³

The most frequent complications presented after mastectomy are: pain, lymphedema of the upper limb ipsilateral to surgery, decreased range of motion (ROM), limited to 90° of flexion, abduction and external rotation to 40° of shoulder and postural changes, especially in vertebral and scapular region column, and may present a high body posture changed with shoulder internally rotated and protruding. The elevated and abducted scapula, increased thoracic kyphosis and cervical lordosis, forward head and slight rotation of the trunk, and a structural scoliosis. In valgus knees and hips come in external rotation with abnormal gait, these factors exacerbate postural imbalances.⁴

Complications associated with radiotherapy are: breast and axillary fibrosis, joint restriction of glenohumeral and scapular waist, neuropathy, chronic pain in the breast region, the scar adherence, plexopathy and fatigue. Among those related to chemotherapy are: fatigue, ataxia and neurotoxicity.⁵

The presence of these complications can compromise the quality of life (QOL) of these women, because it interferes negatively in their daily lives, restricts the execution of physical, industrial and domestic activities, beyond the emotional impact and personal relationships.⁶

In parallel to the clinical treatment of breast cancer, physical therapy plays an important role in the multidisciplinary approach to these patients, working in the pre and early and late postoperative period, treating functional recovery from early to prevent complications, favoring the return to activity daily life, and improving quality of life. However, we question how best to perform these exercises and their influence on postoperative complications.⁷

Therapeutic approaches of manual therapy include the use of simple muscle stretching, post-isometric relaxation, reciprocal inhibition, slow exhalation, eye movements, pressure release trigger point massage, range of motion, heat, ultrasound, galvanic stimulation of high voltage, drug treatment and biofeedback.⁸ Notably, anxiety and pain as well as shoulder capsular approaches may favor the onset of dysfunction and myofascial trigger point formation in mastectomy patients.⁹

Due to the high rate of breast cancer, come to affect women at an increasingly younger age group generating physical, social and emotional changes, the manual therapy is being increasingly used as a new form of treatment.

METHODS
It is a systematic review study in which secondary and third sources were used, on the databases PubMed, Medline, Lilacs and SciELO. Among the 42 initially selected by electronic search in databases articles, 30 were excluded for the title did not meet the inclusion criteria. Retained the 12 studies, 5 were excluded for duplicity. Seven studies were selected for a more thorough analysis through summary, three of them being excluded. The remaining four articles were evaluated from reading the text, as shown in Figure 1.
RESULTS

Table 1 shows the characteristics of the populations of different studies by examining the following variables: gender, number of volunteers, age, lifestyle and adiposity region.

Table 2 presents the results of the intervention and the procedures performed in different studies.

Table 3 presents the methods of assessment and intervention procedures used in these studies.

In table 4 we verify the results of each study and its conclusions.

DISCUSSION

It can be observed that there is a small amount of controlled clinical trial and randomized trial to assess the effect of manual therapy techniques for the treatment of pain in the shoulder and cervical regions of patients after mastectomy surgery. Clinical trials are experimental studies applied to human, aimed at testing the effects of certain techniques, behaviors or medications. These studies are controlled because they have a control group without intervention so that you can compare the intervention applied and thus able to verify that the effects are displayed consequent application or if they result from random errors. Randomization is by random separation between subject groups studied in the execution of the research. Among the various study designs that would become the model for the real experimental verification of the results of an intervention method. (10)

Table 01. Population Characteristics of the different studies.

<table>
<thead>
<tr>
<th>Study</th>
<th>Clinical Signs post surgery</th>
<th>Population</th>
<th>Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fourier, 2009</td>
<td>Pain, joint dysfunction and reduction of shoulder ROM.</td>
<td>18 volunteers</td>
<td>45 a 68 years</td>
</tr>
<tr>
<td>Fernandez-Lao et al, 2012</td>
<td>Pain and Trigger Point in the major and minor pectoral muscle, infraspinatus, scalene, sternocleidomastoid and upper trapezius.</td>
<td>32 volunteers</td>
<td>32 a 65 years</td>
</tr>
<tr>
<td>Fernandez-Lao et al, 2010</td>
<td>Pain in the neck, shoulder and axillary. Trigger point of the scalene muscles, pectoralis major, pectoralis minor, levator scapular, suboccipital and trapezius.</td>
<td>29 volunteers</td>
<td>32 a 65 years</td>
</tr>
<tr>
<td>Pancioni et al, 2010</td>
<td>Patients had pain and muscle shortening in the cervical region.</td>
<td>19 patients</td>
<td>40 a 75 years</td>
</tr>
</tbody>
</table>

Source: Research Data

Table 02. Intervention modalities and procedure of clinical trials found.

<table>
<thead>
<tr>
<th>Study</th>
<th>Intervention</th>
<th>Procedures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fernandez-Lao et al, 2012</td>
<td>Maneuvers myofascial release of the muscles in the shoulder area and scalene.</td>
<td>Four weeks of treatment. Perform the maneuvers myofascial release of the muscles in the shoulder area and scalene after mastectomy surgery.</td>
</tr>
<tr>
<td>Fernandez-Lao et al, 2010</td>
<td>Maneuvers myofascial release in the upper trapezius muscle, sternocleidomastoid, levator scapula, suboccipital, scalene, infraspinatus and pectoralis major was performed.</td>
<td>Five weeks of treatment. Performing maneuvers myofascial release in the muscles of the neck and shoulder after mastectomy surgery.</td>
</tr>
<tr>
<td>Pancioni et al, 2010</td>
<td>Inhibition Muscular Technique, Stretching and Muscle Energy Technique were performed.</td>
<td>Ten sessions, twice a week for 50 minutes, totalizing five weeks of treatment.</td>
</tr>
</tbody>
</table>

Source: Research Data

Table 03. Methodological characteristics of the study (Evaluation and procedure).

<table>
<thead>
<tr>
<th>Study</th>
<th>Type of study</th>
<th>Methods of Assessment</th>
<th>Number of sessions / Treatment Time</th>
<th>Follow-up</th>
<th>Data Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fourier, 2009</td>
<td>Experimental</td>
<td>Evaluation of analog pain scale and range of motion.</td>
<td>4 weeks</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Fernandez-Lao et al, 2012</td>
<td>Experimental</td>
<td>Palpation and evaluation of analog pain scale.</td>
<td>4 weeks</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Fernandez-Lao et al, 2010</td>
<td>Experimental</td>
<td>Evaluation of analog pain scale and digital algometry.</td>
<td>4 weeks</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Pancioni et al, 2010</td>
<td>Almost Experimental</td>
<td>Evaluation of analog pain scale and the McGill questionnaire.</td>
<td>5 weeks</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Source: Research Data
mans is extremely important for scientific research, but
the realization of this type of study requires a higher
level of difficulty, since the idealized pattern formation
evaluation requires a high scientific rigor.

Few randomized controlled trials have been con-
ducted in manual therapy treatments, so few guideli-
nes can guide therapeutic approaches for the treatment
cervical brachial pain. All these studies have used a
drawing with methodological flaws. Although numerous
guidelines that were developed around the world, there
is a scarce data describing the actual effects of manual
therapies in post-mastectomy patients.(11)

All studies used as evaluation method to quantify
pain Visual Analog Scale of Pain (VAS), which consists of
a horizontal line of 10 cm in length, and the ends indi-
cations: no pain, corresponding to zero at left and maxi-
mum pain corresponding to 10 at right.(12)

In addition to these questionnaires the McGill Pain
Questionnaire (MPQ), which was prepared in 1975 by
Melzack at McGill University in Montreal, Canada, with
the objective of providing qualitative measures of pain
that can be analyzed statistically was used. This is one of
the most referenced worldwide and used in clinical prac-
tice. The MPQ assesses the sensory, affective, tempo-
ral and miscellaneous pain qualities. In addition, fea-
tures within its scope an evaluation of spatial distribution
and intensity of pain (“no pain” to “excruciating”). There
is great evidence of validity, reliability and discriminati-
ability of the MPQ when used with young adults.(13)
Other questionnaires could also have been used, so it
is recommended to use the Functional Index Oswestry
adapted to neck pain, this scale consists of sections that
refer to activities of daily living, which may be interrupt-
ted or curtailed.

In clinical analysis of studies found it was obser-
ved an improvement in the level of pain in the neck
and shoulder of all patients undergoing procedures and
manual therapy techniques. Thus it can be seen that
the manual maneuvering of therapy have an important
effect in pain relief when compared to the conservative
treatment with conventional therapy. Note the im-
provement in pain symptoms, however for best evidence
of these effects is needed-more controlled clinical trials
with a larger number of patients in different groups of
different ages and different risk groups.(14)

Breast cancer is a complex disease with ways to
slow or rapidly progressive. It is a systemic disease,
involving multiple organs.(15) One of the major clinical
effects found in postoperative mastectomy surgeries is
myofascial dysfunction, characterized by a painful condi-
tion characterized by the presence of palpable nodules,
called trigger points, which account to an external pres-
sure forced or muscle recruitment with radiated pain.(16)
The trigger points are small and sensitive areas of
the muscle, spontaneously or upon compression, caus-
ing pain in a region known as distant area of refer-
red pain.(17) The therapeutic manual therapy approaches
include the use of single muscle stretching, relaxation
postisometric, reciprocal inhibition, slow exhalation, eye
movement, release pressure and trigger point massage
different maneuvers.(18)

Results obtained in this study it can be concluded
that manual therapy was effective in reducing myofas-
cial pain in mastectomy contributing to improve the qua-
ality of life of these women.

The manual therapy has developed continuously
from the contributions of many doctors and researchers.
It is an instrument of therapy that aims to harmoni-
ze the musculoskeletal system, whose principles inclu-
de techniques that approximate muscle origin and inser-
tion passively. Its main feature is the specific positioning
of body segments in order to relieve the pain of sensiti-
ve points, which can arise in any somatic tissue such as
muscles, fascia, ligaments, tendons, joint capsule, sin-
condroses, cranial sutures, periosteum and bone. These
points can be identified through palpation in the form of
small nodules (from 0.25 to 1.0 cm), usually located in
the subcutaneous tissue, fascia or muscle tissue, caus-
ing tissue irritation, muscle tension and pain. Thus, the
purpose of the manual therapy is to benefit the patient
in relieving pain and muscle spasms.(19)

There are hypothesis that the technique works fa-
voring the balance of tone, it seems to affect the inap-
propriate proprioceptive activity; normalization of fas-
cial tension, occurring a relaxing action of tissue; decre-
ased hypomobility joint, due to the relaxation of mus-

<table>
<thead>
<tr>
<th>Study</th>
<th>Results</th>
<th>Conclusion</th>
</tr>
</thead>
</table>
| Fourier, 2009          | Decreased pain, ROM improved.                | It was observed the effectiveness of manual therapy tech-
iques in recovering the dysfunction of the shoulder joints.  |
| Fernandez-Lao et al, 2012 | Decrease of pain in the shoulder and neck region. | We observed the effectiveness of myofascial release tech-
iques on pain in the shoulder and neck.                      |
| Pancioni et al, 2010   | Significant reduction in pain trigger points and according to the McGill questionnaire. | The study concludes that the Manual Therapy Technical, were effective in reducing myofascial pain in women with mastectomies. |

Source: Research Data
cles and fasciae affected tissue; improving circulation and reducing edema due to relaxation of the musculoskeletal structures; reduction of pain in response to relieve spasm; increased strength and, since the technique restores the normal tone and function of the muscles involved. (20)

Physiotherapy has various manual techniques may provide pain relief, restoring structural and functional properties of the fabric, and may also affect the fluid flow, reducing the structural obstructions within the tissue. These techniques have proven quite satisfactory and immediate results in pain relief in patients with neck pain. (20)

Thus it can be seen that the manual therapy maneuvering have a significant effect in relieving pain in muscles trigger points. (14) Two of the possible explanations for the reduction of pain through manual techniques, it is believed that the hypertonic muscle relaxation muscle groups in the shoulder stabilizers reduces muscle spasm. During the application of the technique is an adaptation of the muscle spindle and allows the Golgi tendon organ to adapt the voltage fluctuation. So after the maneuver we can see an adaptation of the neural components of muscle which promotes a reduction of muscle spasm. (11)

There is a reduction of articular and peri-articular adhesions, which limit the ROM, generates hypomobility and cause pain. During the maneuver the reduced tissue tension, promotes stretching of the capsule and causes the disruption of the adhered tissue, freeing the movement and reducing pain. (11)

The kinesiotherapy isolated and its association with MT were equally beneficial to the recovery of ROM and functionality of upper limbs in women undergoing surgery for breast cancer, and this benefit was maintained over 18 months of follow up. (21)

The injuries to the soft tissues (muscles, tendons, ligaments, joint capsule, articular surface, skin and fascia) are often treated by manual therapy. The normal tissue remodeling and regeneration depend upon mechanical stimulation during the repair process. The MT is directed to restore the arthrokinematics movements, such as the slide, rotate and scroll. When performed in small amplitude produces slip or drift in the joint. Graduated Joint mobilization and performed early in the ROM aims to treat pain through activation of neural structures; while the mobilization applied to the end of the range favors the lengthening of the tissue. In addition, joint mobilization techniques and deep massage can also stimulate proprioception, favoring the movement. (24)

It is suggested by this study to make further controlled and randomized clinical trials in order to better support the use of manual therapy techniques in the treatment of neck and shoulder pain, moreover, propose to undertake studies in different groups of people. Thus providing greater guidance for clinical practice, facilitating the promotion of health.

CONCLUSION

It can be observed that the manual therapy techniques have significant results in relieving the muscle pain in patients submitted to surgery for mastectomy. However, there is still a lack of studies of type randomized controlled trial on the effects of manual therapy in patients in the postoperative period of mastectomy.

REFERENCES