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Original Article

Treatment for chest pain intercurrence after breast cancer surgery using Godoy's intermittent skin therapy

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ABSTRACT

Objective: Chest pain and swelling are routinely reported in women after breast cancer treatment and are often not valued by health professionals. In general, these patients suffer and without many effective solutions. The aim of the present study was to report the results of a novel technique for the treatment of chest pain related to breast cancer treatment.

Methods: A clinical trial was conducted involving 25 women with chest pain resulting from the treatment of breast cancer and submitted to treatment for lymphedema at the Godoy School in 2018. Godoy's intermittent dermal therapy was performed on the participants 2–4 h/day for 2 days until the occurrence of a significant improvement or complete resolution of pain (measured using the visual analog pain scale).

Results: All patients reported a significant reduction in pain in the first ½ h of treatment ($P < 0.0001$, Wilcoxon signed-rank test). Six of the 25 patients (24%) reported the absence of pain after treatment on the 1st day and all (100%) reported the absence of pain at the end of treatment on the 2nd day.

Conclusion: Chronic chest pain in patients having been submitted to treatment for breast cancer can be significantly reduced with Godoy's intermittent skin therapy, achieving standards of normality or near normality within only a few sessions.

Keywords: Breast cancer, chest pain, Godoy's intermittent skin therapy, treatment

Introduction

The treatment of breast cancer often leads to a set of complications in the thoracic region, such as pain, edema, lymphedema, fibrosis, and limited expansion of the rib cage, which can affect respiratory movements. Surgery, radiotherapy, chemotherapy, infection, and obesity are physiopathological factors that can aggravate the symptoms.[1,2] A histological analysis is essential to the prognosis of these patients, as various factors may be involved.[3,4]

The prevalence of pain in the affected breast is approximately 30% before surgery.[5] In a study involving 111 women with pre-operative breast pain, 96.4% developed persistent post-surgical pain and 55% of the patients without pre-operative breast pain developed persistent breast pain. These findings suggest that persistent post-surgical pain is a problem for a large portion of women. Some causes may be related to the type of surgery, with complications such as edema and decreased joint mobility in addition to the psychosocial aspects associated with total or partial breast removal.[6] In another study with a group of 46 women who had undergone surgery for the treatment of breast cancer, 67.3% reported suffering pain.[7]

Lymphedema is one of the complications of treatment for breast cancer. The treatment of lymphedema involves lymphatic therapy (lymphatic drainage and compression mechanisms).[8] However, the treatment of pain has not been stressed in the literature, which leaves these patients without any effective therapeutic options. Moreover, meta-analyses have shown that the main lymphatic drainage techniques are not effective at reducing lymphedema in the upper limbs.[9,10]

De Godoy *et al*. developed a novel concept of lymphatic drainage for the chest and upper limbs involving intermittent compression therapy. For the upper limbs, this method is associated with linear lymphatic drainage in alternative posterior and cephalic vessels when these vessels are pervious. This technique is denominated intermittent skin compression therapy.[11,12]

In the thoracic region, hypertensive lymphedema can occur due to the ligature of the vessels. In such cases, movement therapy leads to an aggravation of the edema and the symptoms. Hypertensive chest lymphedema is one of the types of lymphedema described by De Godoy *et al*., which results from quadrantectomy with axillary dissection[13] and is often accompanied by pain, for which intermittent compression therapy has been used. De Godoy *et al*. have developed new approaches to lymphedema of the lower and upper limbs, proposing a reduction of around 50% in the volume of the affected limb in 5 days of intensive treatment, with the clinical normalization of edema overtime for all clinical stages, including elephantiasis.[14,15]

The aim of the present study was to report the results of a novel technique for the treatment of chest pain related to breast cancer treatment, achieving results in a short period of time.

Methods

Design

Initially, a retrospective pilot study was conducted with 10 patients, followed by a prospective study with 15 patients, totaling 25 women with chest pain following treatment for breast cancer submitted to Godoy's intermittent skin therapy. Pain was measuring using the visual analog pain scale (VAS).

Patients and setting

Twenty-five women with chest pain following treatment for breast cancer were treated at the Godoy School for the treatment of lymphedema in 2018.

Inclusion criteria

Women with chronic chest pain resulting from treatment for breast cancer were included in the study.

Exclusion criteria

Women with pain due to other causes and those with other complications, such as infection, heart failure, or hypoproteinemia diagnosed clinically were excluded from the study.

Development

All participants were in follow-up with their respective physicians after treatment for breast cancer and were evaluated clinically for other adverse conditions that could interfere with therapy. The inclusion criterion was chronic chest pain. The participants were submitted to specific assessments of edema, limb mobility, and pain (using the VAS). However, pain was the only aspect considered in the present study. All participants underwent Godoy's intermittent skin compression therapy, which consists of surface compression in an intermittent manner that may be performed for several minutes or up to several hours.

The method enables an initial reduction in pain after approximately 10 min. The patients underwent treatment 2–4 h/day for 2 days until the occurrence of a significant improvement or complete resolution of the pain, which was measured using the VAS.

Ethical approval

This study received approval from the Institutional Review Board of the São José do Rio Preto School of Medicine, SP, Brazil (certificate number: 4.398.094). All participants signed a statement of informed consent.

Results

All patients (25) experienced a significant reduction in pain evaluated by VAS, as presented in Figure 1, result of in the first ½ h of treatment in 1st day ($P < 0.0001$, Wilcoxon signed-rank test). Table 1 and Figure 2 are demonstrated the results of the visual analog on the 1st day and at end of treatment on the 2nd day. The analysis of the results showed that six of the 25 patients (24%) reported the absence of pain after session of treatment on the 1st day and all (100%) reported the absence of pain at the end of session of treatment on the 2nd day.

Discussion

The present study reports the results of a novel treatment for women with chronic chest pain resulting from treatment for breast cancer. The participants had different levels of pain, but all experienced the complete resolution of pain using Godoy's intermittent skin compression therapy.[13] This is the first study published specifically addressing pain with these characteristics.

Godoy's method involves skin stimulation with the application of low pressure in an intermittent manner. Intermittent variations in pressure on the skin lead to a reduction in both edema and pain.[12] This method was developed approximately 5 years ago and has been undergoing improvements and assessments over the years in the treatment of chest lymphedema, pain, and fibrosis.

The limitation of the method regards the training of the staff, as the method requires rigid control of the pressure exerted. Supervision is necessary to ensure that the health-care provider learns how to perform the method correctly.

The patients had chronic pain and their complaints were not given adequate attention during routine evaluations, as pain

Table 1: Visual analog scale scores before treatment, after the 1st day of treatment, and after the 2nd day of treatment with intermittent skin therapy

Patient	Before treatment	After treatment on the 1st day	After treatment on the 2nd day
1	10***severe	2*mild	0# no pain
2	7***severe	1*mild	0# no pain
3	6**moderate	2*mild	0# no pain
4	8***severe	2*mild	0# no pain
5	8***severe	2*mild	0# no pain
6	4**moderate	1*mild	0# no pain
7	10***severe	2*mild	0# no pain
8	8***severe	5**moderate	0# no pain
9	7***severe	3*mild	0# no pain
10	8***	3*mild	0# no pain
11	1*mild	0 # no pain	0# no pain
12	8***	4**moderate	0# no pain
13	2*mild	0 # no pain	0# no pain
14	6**moderate	4 **moderate	0# no pain
15	7***	3*mild	0# no pain
16	1*mild	0 #no pain	0# no pain
17	6**moderate	1*mild	0# no pain
18	8***severe	2 *mild	0# no pain
19	7***severe	5**moderate	0# no pain
20	6**moderate	0 #no pain	0# no pain
21	8***severe	0 #no pain	0# no pain
22	8***severe	5 **moderate	0# no pain
23	7***severe	2*mild	0# no pain
24	4**moderate	0 #no pain	0# no pain
25	4**moderate	1*mild	0# no pain

VAS: Visual analog pain scale; #0: No pain; *1–3: Mild; **4–6: Moderate; ***7–10: Severe. Considerable 10: Worst pain possible

was considered normal for such patients. One of the patients (35 years of age) had been submitted to bilateral mastectomy and breast reconstruction surgery. She complained of pain for 2 years. The discomfort was limiting to the point where she no longer left the home and became depressed, with no desire to continue living. After the 1st day of treatment, her pain was resolved, mobility returned to the limbs and the patient reported being overjoyed. Another patient had had pulmonary metastasis, had undergone radiotherapy, and was dependent on oxygen therapy. After the first session, she was able to walk normally without supplemental oxygen and remained off oxygen for the subsequent 3 days.

Besides physical therapy, these patients should be evaluated with regard to factors that can aggravate edema and pain and should undergo specific treatments, when necessary, such as treatment for systemic edema and medicinal therapy.[15-18]

These results offer new perspectives for further studies with a larger sample and longer follow-up, creating parameters for

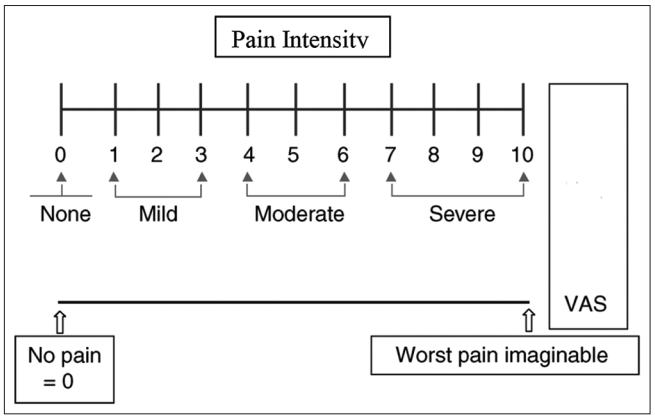

Figure 1: One-dimensional pain intensity scale – VAS

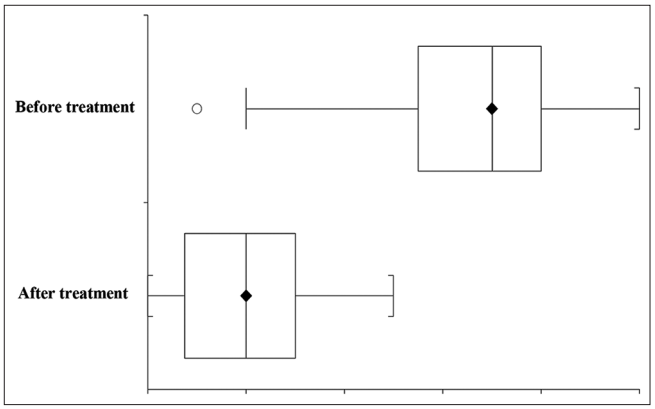

Figure 2: Reduction in pain following intermittent skin therapy in treatment of chest lymphedema resulting from breast cancer treatment

the effective treatment of pain resulting from breast cancer treatment, which is a common and often overlooked complaint.

Conclusion

Chronic chest pain in patients having been submitted to treatment for breast cancer is a major clinical problem and involves a complex pathophysiology causing difficulties experienced in day-to-day lives these patients. This study show is possible can be significantly pain reduced with Godoy's intermittent skin therapy with only a few sessions of treatment.

Authors' Declaration Statements

Ethics approval and consent to participate

This study received approval from the institutional review board of the São José do Rio Preto School of Medicine, SP, Brazil (certificate number: 4.398.094). All participants signed a statement of informed consent.

Availability of data and material

The data used in this study are available and will be provided by the corresponding author on a reasonable request.

Conflicts of interest

The authors declare no conflicts of interest related to this study.

Funding statement

No funding was received for this study.

Authors' Contributions

Conception and design: Godoy JP, Guimarães, Godoy HJP, and Godoy MFG. Analysis and interpretation: Godoy JMP and Godoy HJP. Data collection: Godoy JP, Guimarães, Godoy HJP, and Godoy MFG. Writing the article: Godoy JP, Guimarães, Godoy HJP, and Godoy MFG. Critical revision: Godoy JP, Guimarães, Godoy HJP, and Godoy MFG. Final approval of article: Godoy JP, Guimarães, Godoy HJP, and Godoy MFG. Statistical analysis: Godoy JMP and Godoy HJP. Overall responsibility: Godoy JMP, Guimarães, Godoy HJP, and Godoy MFG. All authors have read and approved the final version of the article.

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