ORIGINAL

Analysis of physical therapy in patients who had radical lymphadenectomy for cutaneous melanoma

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Abstract

Objective: Analyze if patients who had radical lymphadenectomies as a treatment for cutaneous melanoma underwent physiotherapy, observing whether or not lymphedema developed, in addition to observing what techniques were used and whether orientation as to the prevention of lymphedema was received. **Materials and Methods:** We evaluated 84 patients submitted to axillary, inguinal and ilioinguinal lymphadenectomies as a treatment for cutaneous melanoma. The patients enrolled underwent an evaluation consisting of measurement of limb volume by manual perimetry and questions. **Results:** The majority of patients with lymphedema (78.8%) underwent postoperative physical therapy. Somewhat troubling is the fact that only 12 individuals with lymphedema remain under treatment (36.4%), while the remaining 21 (63.6%) did not undergo physical therapy. The start of physical therapy after a 6-month postoperative period (p = 0.007) and after the onset of lymphedema (p = 0.005), performing manual lymph drainage (p = 0.008) and orientation on elastic sleeve or cuff (p < 0.001) showed statistically significant differences when compared to lymphedema and non-lymphedema patient groups. **Conclusion:** Most patients who had lymphedema underwent physiotherapy treatment. In place of a complete regimen of complex decongestive physical therapy, most patients inadequately substituted their physical therapy with isolated techniques. Most patients received orientation on how to prevent lymphedema.

Keywords: lymph node excision, lymphedema, melanoma, physiotherapy.

INTRODUCTION

Lymphedema is a chronic progressive disease characterized by an imbalance between the capacity of the system in lymphatic draining and lymphatic demand, with a gradual increase in limb volume, causing physical and emotional impact, with consequent deterioration in quality of life[1].

Cutaneous melanoma is a malignancy originating from melanocytes, cells found in the basal layer of the epidermis, responsible for skin color. It is a rare but aggressive skin cancer with high mortality rates, and in the presence of lymph node metastasis, it is treated with radical lymphadenectomy[2]. Lymphedema is regarded as the most common morbidity after both axillary and inguinal lymphadenectomy[3-8].

Physiotherapy, through complex decongestive physical therapy, is the main form of lymphedema treatment and by forgoing this treatment can increasingly worsen lymphedema and consequently be more difficult to treat[9,10]. Complex physical therapy is done through manual lymphatic drainage and compression of the limb through bandaging along with lymphedema remedial exercise[9,10].

The objective of this study was to analyze the number of patients who had previously undergone lymphadenectomy that subsequently performed physical therapy, divided into lymphedema and non-lymphedema patient groups, as well as observe what techniques were used and if orientation was received on the prevention of lymphedema.

MATERIALS AND METHODS

This was a retrospective study where patients were evaluated by manual perimetry as a diagnostic method of lymphedema, where the circumferences of each limb were applied to the truncated cone formula to obtain volume:

$$V = \frac{h\,(C1^2 + C1 \times C2 + C2^2)}{12\,\pi} \text{ where,}$$

V: final volume of limb segment; C1 and C2: circumferences between the measured points; h: distance between circumferences (C1 and C2 in each segment), in centimeters.

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Upper-limb lymphedema was considered with a volume difference greater than 10% of the affected limb and control[4] and 6.5% for lower limbs[5].

Patients were asked the following about physical therapy: if they had undergone treatment; if they are currently in follow-up; when the start of treatment was, and; if it was before completing a six-month postoperative period (6m-PO), after this period or whether it was after the onset of lymphedema.

We analyzed the following types of treatment: manual lymphatic drainage (MLD), compressive bandaging and received orientation, use of elastic sleeve or cuff, self-massage and whether the patient received information from the physician or physical therapist on how to prevent lymphedema through specific care with the limb.

Statistical analysis of the physiotherapeutic variables and the presence or absence of lymphedema was performed using univariate analysis, performed with the chi-square test or Fisher's exact test, depending on the expected values that were found in the contingency tables.

RESULTS

Eighty-four patients were evaluated, 40 (47.6%) with axillary lymphadenectomy, 21 (25%) with inguinal lymphadenectomy and 23 (27.4%) with ilioinguinal lymphadenectomy. The prevalence of lymphedema in upper limbs was 17.5% and 59.1% in lower limbs (42.9% and 73.9% in lymphadenectomies inguinal and ilioinguinal, respectively), namely, 33 subjects had lymphedema (39.3%) diagnosed by manual perimetry.

The start of treatment after 6m-PO ($p = 0.007$) and after the onset of lymphedema ($p = 0.005$), the performance of MLD ($p = 0.008$) and orientation on elastic sleeve or cuff ($p < 0.001$) showed statistically significant differences when compared to the groups of patients with and without lymphedema (Table 1).

The start of physical therapy after 6m-PO ($p = 0.003$) and the onset of lymphedema ($p = 0.038$) showed statistically significant differences between the three types of lymphadenectomy. The orientation regarding the use of elastic sleeve or cuff ($p < 0.001$) and how to prevent lymphedema ($p = 0.012$) were also statistically significant when compared between the three groups (Table 2).

DISCUSSION

Although this study was retrospective and therefore had the disadvantage of some patients not precisely remembering certain facts, the data presented are useful for analyzing the number of patients who underwent physical therapy, dividing them into groups of patients with or without lymphedema.

The presence or absence of lymphedema was associated with undergoing therapy, noting that most patients who had lymphedema (78.8%) underwent treatment therapy at some time postoperatively.

Somewhat troubling is the fact that only 12 individuals with lymphedema remain under treatment (36.4%), while the remaining 21 (63.6%) did not undergo physical therapy. Of the 33 patients with lymphedema, 14 (42.4%) started therapy before 6m-PO and 12 (36.4%) after 6m-PO, and of these 12 cases, 9 (27.3%) initiated after the onset of lymphedema. Unfortunately, 7 (21.2%) patients with lymphedema at the time of assessment were never in physiotherapy treatment.

It is extremely important that physicians responsible for the patient refer, as soon as possible, the patient to physical therapy because prevention is still the easiest and cheapest way to treat lymphedema. Treating mild or subclinical lymphedema (patient reports swelling and/or heaviness in the limb, but there is no significant change in the clinical exam) is much more effective than treating lymphedema in more advanced stages.

Patients treated with lymphedema, in accordance with good evolution, present perimetry with stable values; thus, they can only perform follow-up physical therapy every one, three or six months. If the patient notices increased swelling of the limb, they must request a new evaluation, and if necessary, return to physical therapy.

Physical therapy not only prevents lymphedema, it is also concerned with the functionality of the limb and helps to gain range of motion (ROM), because the side affected by lymphadenectomy tends to have restricted joint movement[11,12].

The treatment of lymphedema, also known as Complex Decongestive Physical Therapy, is somewhat complicated in that it requires many different treatments and procedures associated with: MLD, compression bandaging, use of elastic sleeve or cuff, kinesiotherapy, skin care and orientation[9,10,13,14]. Often, it is noted that some professionals who do not dominate in this therapy end up treating lymphedema mistakenly, using the techniques in isolation.

More than half of patients with lymphedema (60.6%) underwent MLD and only 18.2% of the patients underwent compressive bandaging. Compressive bandaging was little used, although it is the main factor for reducing the volume of limbs. The sole use of MLD is not a good treatment option as such: it is correct to associate several techniques[9].

Self-massage is a technique that should be explored further, as it may be beneficial in its treatment. However, in patients with lymphedema, only 33.3% received orientation as to its use. Self-massage for the upper limbs is easier to perform, but for the lower limbs it is more difficult and therefore less used and oriented to patients.

Fortunately, most patients with or without lymphedema (75%) received orientation on how to prevent lymphedema from at least one health professional. The

Table 1. Relationship of lymphedema (manual perimetry) with physical therapy.

Physiotherapy	Lymphedema				*p*-value
	No (n = 51)		Yes (n = 33)		
	n	%	n	%	
Previous physiotherapy	31	60.8	26	78.8	0.084
Current follow-up	11	21.6	12	36.4	0.138
Start until 6 months postoperative	25	49	14	42.4	0.554
Start after 6 months postoperative	6	11.8	12	36.4	0.007
Start after lymphedema	2	3.9	9	27.3	0.005
Manual lymph drainage	16	31.4	20	60.6	0.008
Compressive bandaging	4	7.8	6	18.2	0.181
Orientation: self-massage	14	27.5	11	33.3	0.565
Orientation: prevention	39	76.5	24	72.7	0.699
Orientation: elastic sleeve/cuff	10	19.6	21	63.6	< 0.001

Table 2. Relationship of type of axillary lymphadenectomy (AL), inguinal (IL) or ilioinguinal (IIL) with physical therapy and orientation given by the physical therapist or physician.

Physiotherapy	AL (n = 40)		IL (n = 21)		IIL (n = 23)		*p*-value
	n	%	n	%	n	%	
Previous physiotherapy	27	67.5	12	57.1	18	78.3	0.325
Current follow-up	10	25	5	23.8	8	34.8	0.643
Start until 6 months postoperative	21	52.5	10	47.6	8	34.8	0.489
Start after 6 months postoperative	6	15	2	9.5	10	43.5	0.003
Start after lymphedema	2	5	2	9.5	7	30.4	0.038
Manual lymph drainage	13	32.5	11	52.4	12	52.2	0.188
Compressive bandaging	2	5	5	23.8	3	13	0.100
Orientation: self-massage	14	35	3	14.3	8	34.8	0.201
Orientation: prevention	33	82.5	18	85.7	12	52.2	0.012
Orientation: elastic sleeve/cuff	3	7.5	11	52.4	17	73.9	< 0.001

patient's understanding about what lymphedema is, as to what happens and the risk of development even after lymphadenectomy is of extreme importance to the individual's adherence in prevention and treatment. For this, the responsible professional should transmit this information clearly using more informal language to facilitate a better understanding.

However, only verbal orientation is helpful to a certain point, because individuals tend to forget important information and thus, the risk of developing lymphedema increases. Thus, the preparation of printed informative data sheets containing all the necessary precautions to prevent lymphedema, as well as orientation on exercises to gain joint ROM and improve lymphatic flow becomes an interesting option. Through these, the patient can consult them in case of questions.

The use of elastic sleeve or cuff was made by 63.6% of patients with lymphedema and 19.6% in those without this lymphatic dysfunction. Therefore, orientation regarding the use of elastic sleeve or cuff was observed more for patients with lymphedema.

CONCLUSION

Most patients who had lymphedema (78.8%) performed the treatment before 6mo-PO, after this period or after the onset of lymphedema. Only 36.4% of individuals with lymphedema at assessment are still under treatment.

Most patients (75%) received orientation on how to prevent lymphedema. In place of a complete regimen of complex decongestive physical therapy, most patients inadequately substituted their physical therapy with isolated techniques.

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