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ORIGINAL ARTICLE

Erysipelas in women with breast cancer followed in a rehabilitation service

Erisipela em mulheres com câncer de mama seguidas em um serviço de reabilitação

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ABSTRACT

A cross-sectional study that analyzed the occurence of erysipelas in women with breast cancer. It was conducted in a rehabilitation center, and 84 women with breast cancer were included by convenience. It was observed that 19% of women had signs and symptoms of erysipelas. The most prevalent signs were skin hyperemia, local heat, and pain (100%). Moreover, 75% of participants with erysipelas also had lymphedema (p<0.005). Among women with lymphedema and erysipelas, 83.8% had the lymphedema before erysipelas. The prevalence of erysipelas among women with breast cancer in rehabilitation pointed that within the predisposing factors of this pathology, there was an association with the presence of lymphedema. This data justify the inclusion of prevention measures for lymphedema, such as hydration of the superior limb homolateral to the surgery and to avoid trauma in the care provided to women with breast cancer, also preventing erysipelas.

Descriptors: Breast Neoplasms; Morbidity; Erysipelas; Nursing.

RESUMO

Estudo transversal que buscou analisar a ocorrência de erisipela em mulheres com câncer de mama. Foi desenvolvido em um núcleo de reabilitação e incluídas, por conveniência, 84 mulheres com câncer de mama. Observou-se que 19% das participantes apresentaram sinais e sintomas de erisipela. Os sinais mais prevalentes foram hiperemia da pele, calor local e dor (100%). Além disso, observou-se que 75% das participantes com erisipela também apresentavam linfedema (p<0,005). Entre as mulheres com linfedema e erisipela, observou-se que 83,3% apresentavam o linfedema previamente ao primeiro episódio de erisipela. A prevalência de erisipela entre mulheres com câncer de mama em reabilitação, apontou que dentre os fatores predisponentes desta patologia houve associação com a presença de linfedema. Dados que justificam a inclusão de medidas de prevenção do linfedema, como hidratação do membro superior homolateral à cirurgia e evitar traumas nos cuidados prestados às mulheres com câncer de mama, prevenindo também a erisipela.

Descritores: Neoplasias da Mama; Morbidade; Erisipela; Enfermagem.

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INTRODUCTION

The therapy used to treat breast cancer can result in morbidity in the short, medium and long term, such as bleeding, tissue necrosis, dehiscences, seroma formation, lymphedema, infectious processes, within others that compromise the woman's quality of life[1].

Within the infectious processes, erysipelas is noted, which is a common infection of the superficial layer of the skin. It is characterized as acute, with the appearance of local signs of inflammation, and progressing with erythema, pain, fever, and well-defined limits, with an aspect of *peau de orange*, clearly defining the surrounding tissue[2].

Erysipelas is a known complication after mastectomy and radiotherapy in the treatment of breast cancer, as this lymphatic circulation is affected by these treatments, favoring the obstruction and the progressive destruction of the lymphatic communications. These changes result in repetitive inflammatory processes, and they generate a vicious cycle of erysipelas, increasing the risk of lymphoedema and its aggravation[3,4]; however, there are a few cases reported in the literature.

Moreover, the break in the skin[3] and predisposing factors such as obesity, and infectious processes increase the risk of developing this complication among women with breast cancer[5].

Within the strategies to control erysipelas, health education actions for breast cancer women regarding skincare of the arm homolateral to surgery, lymphoedema prevention, and recognition of erysipelas' signs and symptoms are noted. With educational efforts, it is favorable to have an early diagnosis and appropriate treatment, which are extremely relevant to avoid developing more severe conditions, such as sepsis[6].

Among these health education actions, the importance of stimulating self-care is noted because it contributes to preventing this event in this population. One of the strategies to encourage self-care is to educate about the disease. Thus, health professionals need to guide women on how to care for the limb homolateral to the surgical procedure and to promote self-care. The literature points to the importance of knowledge in self-management of a health condition related to cancer or other chronic conditions, and they emphasize that knowledge is associated with changes in lifestyles of individuals with chronic diseases[5,7].

Considering the lack of published studies about this theme, the importance of care strategies led by health professionals working with breast cancer women and, focused on improving the quality of care, this study aimed to analyze the occurrence of erysipelas among women followed by a rehabilitation service for breast cancer.

METHODS

We conducted a descriptive and cross-sectional study, developed in a rehabilitation center for women with breast cancer. Because there was no systematic registry of erysipelas/cellulitis occurrence, and, this can affect women in any stage of the disease, we included women who attended the service in 2017 who finished their cancer treatment (surgery, chemotherapy and/or radiotherapy). Therefore, our convenience sample totalized 84 participants.

The data collection occurred from January to December 2017. We conducted through interviews using a questionnaire composed of identification data; sociodemographic data; comorbidities such as hypertension, diabetes mellitus, and obesity; treatments used for the breast cancer; care with the homolateral arm to the surgery and the skin; the presence of lymphoedema; the presence and characteristics of erysipelas with changes in the skin, fever, and pain.

Besides the variables cited, the questionnaire collected data on weight and height, measured on the same day as the interview, and after, they were used to calculate the Body Mass Index (BMI). The BMI calculation was the division of body mass by the height[2], and the body mass was expressed in kilograms and the height in meters. We used the World Health Organization (WHO)[8] classification to identify indexes of obesity (BMI≥30.0 Kg/m^2).

Between the erysipelas characteristics, we investigated the presence of pain. To assess pain intensity, we used the Pain Visual Analogue Scale, graded from zero to 10[9], following the classification: intensity 0 (absence of pain); 1–4 (mild pain); 5–6 (moderate pain) and 7–10 (intense pain).

We organized the data in an Excel 2010® (Microsoft Office) spreadsheet and analyzed using the IBM Statistical Package for the Social Sciences (SPSS) 20. We conducted descriptive analyses of central tendency and dispersion for numeral variables and simple frequencies for the absolute and relative variables. We investigated the relationship between the ordinal or numerical qualitative variables using the Chi-Square test.

The Ethics in Research Committee approved the study following the guidelines and regulating norms for research involving human beings, present in the Resolution of the National Council of Health 466-2012 (Protocol CAAE no. 49527615.6.0000.53.93).

RESULTS

Participants' age ranged between 32 to 87 years, mean age 61.1 years ± 10.9, and 63.0% were in the age group of 50 to 69 years. Most participants (76.2%) self-identified as White, 60.7% were married, 46.4% stayed at home, and 38.0% had five to eight years of education.

Regarding health comorbidities, most (54.8%) reported being hypertensive (Table 1).

Regarding the treatments, 56.0% women had a mastectomy, and 60.7% had the left breast compromised, 90.5% had an axillary lymphadenectomy, 75.0% chemotherapy, and 77.4% hormone therapy (Table 2)

Table 1. Distribution of interviewed women according to age, marital status, race, education, occupation, and comorbidities (n=84). Ribeirão Preto, SP, Brazil, 2017.

Variable	Absolute Frequency	%
Age		
32–49	10	11.9
50–69	53	63.0
70 years or more	21	25.0
Marital status		
Single	11	13.1
Married	51	60.7
Separated/Divorced	12	14.3
Widowed	10	11.9
Race		
White	64	76.2
Black	7	8.3
Brown/mulatto	12	14.3
Yellow	1	1.2
Education		
4 years or less	12	14.3
5 to 8 years	32	38.0
9 to 12 years	29	34.5
More than 13 years	11	13.0
Occupation		
Stay at home	39	46.4
Retired/pensioner	27	32.1
Health leave	10	11.9
Others	8	9.5
Comorbidities		
Hypertension	46	54.8
Obesity	41	48.8
Lymphoedema	34	40.5
Diabetes Mellitus	17	20.2

Source: Study database.

In the scenario where the study was developed, women are oriented and stimulated by health professionals to exercise self-care with the homolateral arm to breast cancer during the whole rehabilitation process. When questioned about this information, 100% of participants reported having received guidance. When asked about daily care, the most frequent were: to avoid carrying weight (88.1%), to do physical exercise with the arm (79.8%) and, to avoid assessing blood pressure in the arm homolateral to the surgery (70.2%), (Table 3).

Within the study participants, 16 (19.0%) had symptoms and signs of erysipelas. The most prevalent signs were skin hyperemia (100%), local heat (100%), and pain (100%) (Table 4). Among the participants with erysipelas, 81.2% mentioned their affected arm being the one homolateral to the breast cancer surgery, 12.5% referred to having a lower limb infected and, 6.2% had their face affected. Regarding pain, 62.5% reported moderate and 37.5% intense pain.

Table 2. Distribution of women according to laterality, type of surgery, axillary lymphadenectomy, and treatments (n=84). Ribeirão Preto, SP, Brazil, 2017.

Variables	Absolute Frequency	%
Compromised breast		
Right	30	35.7
Left	51	60.7
Both	3	3.6
Type of Surgery		
Mastectomy	47	56.0
Quadrantectomy	32	38.1
Tumorectomy	2	6.0
Axillary Lymphadenectomy		
Yes	76	90.5
No	8	9.5
Treatments*		
Hormone therapy	65	77.4
Radiotherapy	60	71.4
Adjuvant chemotherapy	32	38.1
Neoadjuvant therapy	31	36.9

*There were more than one modality of treatment/ patient in a few cases.
Source: Study database.

Participants with erysipelas after the surgical procedure for treating breast cancer were 70 years or older (37.5%), 62.5% had a mean BMI of 30.9 Kg/m^2 (SD=5.7), characterizing the presence of obesity, hypertension (68.7%) and diabetes mellitus (6.2%). About the surgical procedure, most had a mastectomy (56.2%) and axillary lymphadenectomy (93.7%). Such characteristics did not have a significant association with the development of erysipelas (Table 5).

Another observed characteristic among women with erysipelas was the presence of lymphoedema, and 75% had such morbidity post-surgery. There was a significant association between the two variables (Table 5). Among the 12 women with lymphoedema and erysipelas, 10 (83.3%) participants had lymphoedema before the first episode of erysipelas.

Another relevant data was that among women with erysipelas, seven (43.7%) reported more than one episode of the referred infectious process; and three (42.8%) women reported two episodes, another three (42.8%) reported having it three times, and one woman (14.2%) reported having it four times. Among the women with erysipelas more than once, it was seen that four (57.1%) had lymphedema before the first episode.

Table 3. Care with the arm homolateral to the surgery, cited by participants (n=84). Ribeirão Preto, SP, Brazil, 2017.

Daily care	Absolute Frequency	%
To avoid carrying heavy weight	74	88.1
To exercise with the arm closer to the surgery	67	79.8
To avoid measuring blood pressure on the operated side	59	70.2
To avoid removing the cuticle	55	65.5
To maintain hydrated skin	54	64.3
To avoid vaccines in the operated arm	52	61.9
To avoid heat (iron and oven)	51	60.7
To avoid using tight jewelry	46	54.8
To avoid insect bites	40	47.6
To avoid using tight clothing	35	41.7
To self-massage	32	38.1
To use sunscreen	29	34.5
To avoid wax for hair removal	27	32.1
To replace the use of razors by cutting the axilla hair closer to the skin	26	31.0
To use gloves for house chores and gardening	22	26.2

Source: Study database.

Table 4. Signs and symptoms of erysipelas cited by participants (n=16). Ribeirão Preto, SP, Brazil, 2017.

Signs and symptoms of erysipelas	Absolute Frequency	%
Skin hyperemia	16	100
Local heat	16	100
Local pain	16	100
Local hardening	12	75.0
Limb edema	11	68.8
Blisters and lesions	1	6.3

Source: Study database.

DISCUSSION

Despite the advances obtained in the last years in oncology therapy, the infectious processes associated with treatments remain a significant cause of morbidity and mortality[10]. One of these infectious processes is the development of erysipelas that can affect any individual,

Table 5. Clinical characteristics of participants with erysipelas according to age, comorbidities, type of surgery, and lymphoedema (n=16). Ribeirão Preto, SP, Brazil, 2017.

Characteristics of participants with erysipelas	Absolute Frequency	%	p-value
Age			
70 years or older	6	37.5	0.308
Comorbidities			
BMI ≥ 30 Kg/m^2	10	62.5	0.476
Hypertension	11	68.7	0.212
Type of surgery			
Mastectomy	9	56.2	0.997
Axillary Linphadenectomy	15	93.7	0.620
Lymphedema			
Presence of lymphedema in the limb	12	75.0	**<0.005**

Source: Author's database.

with cancer or not. It should be considered a severe clinical condition because it can extend to other organs, with the possibility of evolving to sepsis and even death if not timely and adequately treated[11].

About the occurrence of erysipelas in women with breast cancer, it is more frequent in the superior limb homolateral to the surgical procedure and varies from 13% to 69%[2,6]. In a study aimed to identify the main risk factors, clinical and evolutionary characteristics of erysipelas in the upper limb among patients in a service of infectious diseases, 145 erysipelas cases were identified. From these, 12 (8.2%) affected the upper limb, and all were in women with breast cancer who had a surgical procedure associated with axillary lymphadenectomy[12]. Besides that, the occurrence and clinical characteristics presented by these 12 participants, such as obesity, diabetes mellitus, and lymphoedema of the upper limb[12], corroborates with the results of the present study.

Within the predisposing factors to erysipelas, the presence of lymphoedema was associated with the infection, what justifies the attention necessary to lymphoedema prevention, such as hydration of the upper limb homolateral to the surgery and to avoid traumas, which can eradicate potential entrance portals. The management of erysipelas should be concentrated not only in the infection treatment but also in the training of health professionals who will work in developing actions with the women. Actions to be directed at prevention measures and identification of erysipelas as well as lymphoedemas are needed, avoiding its recurrence and/or aggravation.

It is complex to establish the causal relationship of the association between erysipelas and lymphoedema, once the occurrence of erysipelas affects the lymphatic vascularization. As a consequence, lymphoedema can develop, and it can increase at each event of these infections, as a vicious cycle[4]. However, studies point to the relationship between the occurrence and/or recurrence of erysipelas in individuals with lymphoedema[2,6], including the present study, in which the relationship between patients who presented infection by erysipelas and had lymphoedema was statistically significant ($p<0.005$)

Reinforcing our findings, a study from Sweden with 130 women post-mastectomy and with lymphoedema found that 76 participants were diagnosed with erysipelas during the pre-surgical period. Of these, 13 women had recurrent infection post-surgery ($p<0.001$). Among the 54 participants without previous history of pre-surgical erysipelas, six developed the infection after the surgical procedure[13].

Associated with the contributing factors, such as obesity, hypertension, diabetes mellitus, and surgical procedures, the occurrence of erysipelas relates to a primary skin lesion that favors the development of an infectious process, such as the one observed by a study with 86 participants from Tunisia, where 83.7% of erysipelas cases resulted from a lesion[14].

Thus, care with the arm contributes to preventing lymphoedema development and, consequently, erysipelas, such as the maintenance of hygiene and hydration of the limb[15]. In this study, the care was mostly related to hydration of the limb and with possible activities that could result in lesions of the skin integrity, such as removing the cuticle and, receiving injectable medications. However, a small number of women were attentive to other prevention actions, such as being careful with insect bites and using gloves for domestic chores.

Despite the constant monitoring and guidance of post-surgical care, women are still subject to develop inflammatory and infectious processes favoring the development and/or worsening of complications, such as lymphoedema and erysipelas[3,16]. It is noteworthy that erysipelas is seen in any phase of the disease, varying from months to years after breast cancer, and they can be recurrent episodes or not[17].

However, our results point to a need of vigilance from health professionals regarding the assessment of the skin integrity of arms of these women. Besides the attention of professionals, women with breast cancer should be involved, motivated with knowledge and skills to recognize lesions and the prophylaxis of erysipelas. This can contribute to these women living better with their chronic health condition and improve their quality of life.

Regarding the limitations of this study, the cross-sectional design impedes the assessment of cause-effect relationships, and we conducted the study in a single site.

CONCLUSIONS

The prevalence of erysipelas in women after breast cancer treatment was 19%. There was a significant association between the occurrence of erysipelas and the presence of lymphoedema in the upper limb homolateral to cancer.

Prevention actions for lymphoedema of the upper limb is recommended for women with breast cancer, such as hydration of the upper limb homolateral to surgery and to avoid traumas, which can eradicate potential entrance doors for the development of erysipelas. However, for the management of erysipelas to be adequate, it is important to not centralize the actions only in the medication treatment of the infection, but also capacitating health professionals to act with prevention and identification measures for erysipelas, as well as lymphoedema. It is essential for such actions to be taken with the women, incentivizing self-care, this avoiding the recurrence and/or worsening of these scenarios.

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