

SURGICAL TREATMENT OF BREAST CANCER: DATA FROM A RENOWNED INSTITUTION IN THE BRAZILIAN NORTHEAST

Tratamento cirúrgico do câncer de mama: dados de uma instituição de referência do nordeste brasileiro

Cibele Vasconcelos de Oliveira^{1*}, Francisco Pimentel Cavalcante¹, Rafael Valente Batista², José Carlos Lucena de Aguiar Ferreira², Olívio Feitosa Costa Neto², Marcos Venício Alves Lima^{1,2}

ABSTRACT

Introduction: Worldwide, breast cancer is the neoplasia that most affects women, after skin cancer, and accounts for 25% of new cases each year. Over the past 40 years, the survival rate has been increasing in developed countries — currently, it is 85% in 5 years —, while in developing countries it remains between 50 and 60%. As such, routine use of mammography throughout the world is considerably important. **Objectives:** To describe demographic and pathological characteristics in addition to the surgical approach of patients with invasive breast carcinoma in a renowned institution. **Methods:** A cross-sectional, descriptive study using secondary data obtained from medical records of breast cancer patients operated on at the Cancer Institute of Ceará (ICC), from 2002 to 2012. Data were analyzed using Epi Info 7.0 software. **Results:** The study population included 746 patients with primary breast tumors, of which 626 (84%) were invasive. Within the invasive breast tumors, the majority (554 – 88.49%) were of the invasive ductal carcinoma (IDC) type. Concerning stages, 351 cases (56.07%) were stage II. The average age of patients was 41 to 50 years old, and T2 tumors measured approximately 2 to 5 cm. The most frequent surgery was a quadrantectomy. A sentinel lymph node biopsy (SNB) was performed in 368 patients (58.78%). **Conclusion:** Our casuistry provides important information with regard to the profile of patients surgically treated at a renowned public institution in the Brazilian Northeast. Diagnosing the disease at an advanced stage still occurs at this institution, which results in high rates of mastectomy. Thus, better results tend to be obtained as better screening proposals are provided.

KEYWORDS: Sentinel lymph node biopsy; carcinoma, ductal, breast; breast neoplasms.

RESUMO

Introdução: O câncer de mama é a neoplasia que mais acomete mulheres em todo o mundo após o câncer de pele, representando 25% dos casos novos a cada ano. Nos últimos 40 anos, a sobrevivência vem aumentando nos países desenvolvidos — atualmente, é de 85% em 5 anos —, enquanto nos países em desenvolvimento permanece entre 50 e 60%, tendo o uso rotineiro da mamografia considerável importância em todo o mundo. **Objetivos:** Descrever as características demográficas, patológicas e as abordagens cirúrgicas de pacientes com carcinoma invasivo da mama em uma instituição de referência. **Métodos:** Estudo transversal e descritivo, utilizando dados secundários obtidos nos prontuários médicos de pacientes com câncer de mama operadas no Instituto do Câncer do Ceará (ICC), entre os anos de 2002 e 2012. Os dados foram analisados por meio do *software* Epi Info 7.0. **Resultados:** A população de estudo correspondeu a 746 pacientes com tumores primários de mama, dos quais 626 (84%) apresentavam-se como invasivos, sendo a maioria (554 – 88,49%) do tipo carcinoma ductal invasivo (CDI). No que diz respeito ao estágio, 351 casos (56,07%) eram II. Prevaleceu a faixa etária de 41 a 50 anos, e os tumores T2 mediam aproximadamente 2 a 5 cm. A cirurgia mais frequente foi a quadrantectomia; e a biópsia do linfonodo sentinela (BLS) foi realizada em 368 pacientes (58,78%). **Conclusão:** Nossa casuística fornece informações importantes sobre o perfil de pacientes portadoras de tumor invasivo da mama tratadas cirurgicamente em uma instituição filantrópica do Nordeste brasileiro, referência no tratamento do câncer. O estadiamento avançado ao diagnóstico ainda é presente nessa instituição, o que determina elevadas taxas de mastectomia. Assim, melhores resultados tendem a ser obtidos à medida que são apresentadas melhores propostas de rastreamento de massa.

PALAVRAS-CHAVE: Biópsia de linfonodo sentinela; carcinoma ductal de mama; neoplasias da mama.

Study carried out at Hospital Haroldo Juaçaba/Instituto do Câncer do Ceará – Fortaleza (CE), Brazil.

¹Instituto do Câncer do Ceará – Fortaleza (CE), Brazil.

²Universidade Estadual do Ceará – Fortaleza (CE), Brazil.

*Corresponding author: cibelevas@gmail.com

Conflicts of interest: nothing to declare.

Received on: 10/23/2016. Accepted on: 10/05/2017

INTRODUCTION

Worldwide, breast cancer is the neoplasia that most affects women after skin cancer, and accounts for 25% of new cases each year. According to the Brazilian Cancer Institute (*Instituto Nacional do Câncer*—INCA), about 57,960 new cases are expected in 2017. There is a death estimate of 14,388, of which 181 are men and 14,206 are women (2013-SIM). In Ceará, 2,160 new cases are expected and, in Fortaleza, 860 cases are expected for the same period¹.

Over the past 40 years, survival rates have been increasing in developed countries — currently, it is 85% in 5 years —, while in developing countries it remains between 50 and 60%. This difference can be explained by the easy access to mammographic screening in the first world², which leads to the diagnosis of minor tumors³ and in turn, to advancements in cancer treatment⁴.

The routine use of mammography has spread throughout the world, leading to the early detection of breast cancer. However, much is still being discussed about the ideal age for beginning the screening, as well as the appropriate periodicity⁵. The Brazilian Society of Mastology recommends the introduction of screening at the age of 40, since a considerable number of women get cancer under the age of 50¹, obeying the annual periodicity.

The advancements in treatment also had an important impact on patient survival. The advent of modern adjuvant therapies, including chemotherapy, hormone therapy and target therapies, as well as the improvement of radiotherapy techniques, have made it possible to reduce surgery with the introduction of conservative techniques and a sentinel lymph node biopsy (SLNB), without harming oncological safety and with a paradoxical decrease in loco-regional recurrence rates⁶⁻¹².

In the state of Ceará, patients who require care in mastology have few units to rely on, both in primary and tertiary care. In this last category, there is the Cancer Institute of Ceará (*Instituto do Câncer do Ceará* – ICC), one of the few and the largest High Complexity Oncology Centers (*Centro de Alta Complexidade em Oncologia* – CACON) in the state.

Breast cancer has thus become the aim of this study, precisely because it represents a public health problem. Due to data limitations in the Brazilian Northeast, we developed this study with the goal of enabling future changes in public health policies associated with oncology to be executed on a scientific basis, avoiding empiricism in health decision-making in the region.

METHOD

This is a cross-sectional and descriptive study, based on secondary data obtained from the review of medical records of breast cancer patients undergoing surgical treatment at

the ICC between 2002 and 2012. Regarding eligibility, an intentional sample was performed from the study population, whose inclusion criteria were: female patients with a previous diagnosis of invasive breast carcinoma obtained through core biopsy or surgical biopsy, and who had undergone surgical treatment. Patients with intraductal neoplasms, non-epithelial lineage tumors (sarcomas, lymphomas and phyllodes tumors) or with insufficient information in the medical records were excluded from the analysis. Data were tabulated and statistically treated using Epi Info 7.0 software. This study was approved by the Research Ethics Committee of ICC, under protocol no. 61,473 on July 26, 2012.

RESULTS

The study population included 746 patients with primary breast tumors, of which 106 presented ductal carcinoma in situ (DCIS) as an initial histopathological type, while 626 were classified as invasive tumors (Table 1). The remaining 14 patients were identified with sarcomas (4), phyllodes tumors (8) and lobular carcinomas in situ (2).

Of the 626 invasive tumors, 554 (88.49%) had invasive carcinoma of no special type (not otherwise specified – NOS) as a histopathological diagnosis; 35 (5.60%), invasive lobular carcinoma; 17 (2.72%), papillary carcinoma; 6 (0.95%), medullary carcinoma; 4 (0.64%), tubular carcinoma; 4 (0.64%), cribriform carcinoma; 3 (0.48%), metaplastic carcinoma; and 3 (0.48%), Paget's disease.

In relation to pathological staging (PS), stage I was found in 132 cases (21.08%); stage II in 351 (56.07%); stage III in 88 (14.05%); and stage IV in 8 (1.28%).

Regarding the age profile, the highest percentage was found between 41 and 70 years of age, distributed as follows: 9 (1.43%) under the age of 30; 53 (8.46%) between 31 and 40; 161 (25.71%) between 41 and 50; 145 (23.18%) between 51 and

Table 1. Distribution of the absolute and relative frequencies of histological types of invasive breast tumors operated on at the Ceará Cancer Institute between 2002 and 2012.

Histological type	N	Variation (%)
Invasive carcinoma (no special type)	554	88.49
Invasive lobular carcinoma	35	5.60
Papillary carcinoma	17	2.72
Medullary carcinoma	6	0.95
Cribriform carcinoma	4	0.64
Metaplastic carcinoma	3	0.48
Paget's disease	3	0.48

60; 168 (26.85%) between 61 and 70; and 90 (14.37%) older than 70 years old.

Regarding the size of the tumors, the majority of patients, at the first visit, had measurements between 2 and 5 cm. After stratification of the sizes, 162 (25.87%) showed a tumor smaller than 2 cm; 389 (62.14%) between 2 and 5 cm; and 64 (10.22%) larger than 5 cm.

Regarding surgery (Table 2), 278 (44.4%) were quadrantectomies; 92 (14.69%) were single mastectomies; 251 (40.09%) were modified radical mastectomies; 3 (0.47%) were Halsted radical mastectomies; and 2 (0.35%) were skin-sparing mastectomies with a conservation of the Nipple–Areola Complex (NAC). SLNB was performed in 368 (58.78%) cases. Among the SLNB patients, 100 (27.17%) had lymph nodes that were compromised by neoplasia, after having been submitted to axillary emptying (AE). Of these, 44 (44.0%) had additional lymph node disease, while 56 (56.0%) had disease-free axilla after AE.

DISCUSSION

With the evolution in diagnostic methods and comprehensive screening, breast cancer has been increasingly diagnosed in its early stages. There is, however, a controversy about the ideal age for the start of mammographic screening. In the study population, a considerable number of patients (35.6%) had a cancer diagnosis under the age of 50, which is in line with other studies^{13,14}. For this reason, mammography screening in women over the age of 40 has been a subject of debate^{5,13,14}.

Late diagnosis is still a problem in our country. In this casuistry, stages II and III predominated (70.12%), while stage I accounted for 21.08%, suggesting that early detection has not yet fully achieved its goals. Other reviews showed a similar scenario, with a prevalence of later diagnosis. The study by Cintra et al.¹⁵, for example, shows a prevalence of 86% for stages II and III. According to Abreu and Koifman¹⁶, stages III and IV were the types most often found in public institutions for the treatment of breast cancer.

Table 2. Distribution of the absolute and relative frequencies of surgeries performed on patients with invasive breast tumors at the Ceará Cancer Institute between 2002 and 2012.

Type of surgery	N	Variation (%)
Quadrantectomy	278	44.40
Simple mastectomy	92	14.69
Radical modified mastectomy	251	40.09
Halsted radical mastectomy	3	0.47
Skin-sparing mastectomy with conservation of the Nipple–Areola Complex	2	0.35

In histology, there was a predominance of invasive carcinoma NOS (88.49%). The size of the tumors was concentrated in values between 2 and 5 cm (62.14%), while 25.87% were smaller than 2 cm. There are, however, regional differences in staging: in more developed regions, there are a larger number of early stages than those observed in this analysis, while less developed regions experience higher rates of locally advanced tumors^{13,17}. Identifying these discrepancies can contribute to the improvement of tracking policies by region.

There was a predominance of mastectomies (55.6%) in their various forms when compared to conservative surgeries (44.4%) in the procedures performed, which is a possible reflection of the staging.

The radicalness of axillary surgery has also been decreasing over the years, with a reduction of inherent complications, especially due to early diagnosis and the advent of the sentinel lymph node (SLN)^{8,9,11,18}. Although it cannot be denied that modified radical mastectomy is in decline, it is still very prevalent in underdeveloped regions, as demonstrated in this study. On the other hand, skin-sparing mastectomy with conservation of the Nipple–Areola Complex, at the time of development of this study (2002 to 2012), was reflected in rare patients.

SLNB was performed in 58.2% of the patients, while the others underwent axillary dissection. Of those who underwent SLNB, 100 (27.1%) showed positive SLN. Thus, more than two-thirds of the patients did not require AE and were spared the inherent morbidity of this procedure¹⁸.

CONCLUSION

Our casuistry provides important information about the profile of patients surgically treated in a renowned philanthropic institution in the Brazilian Northeast. Our results, when compared to those obtained in other regions of Brazil, also show a tendency of the hospitals to perform less extensive procedures, either with regard to the surgical treatment of the primary tumor or with regard to the axillary approach, which may demonstrate a reduction in the number of patients with advanced stages of cancer. However, we cannot rule out that this phenomenon is the result of paradigm changes in the treatment of breast cancer.

Thus, we believe that actions in primary health care and the improvement of mass screening, in conjunction with improvements in surgical techniques and adjuvant treatments, will increase the rates of control of the disease, as well as reduce morbidity and mortality, and reduce the financial cost of treatment. This is fundamental, especially in regions that lack human capital, technological aids and financial resources for health services.

REFERENCES

1. Brasil. Ministério da Saúde. Secretaria de Atenção à Saúde. Instituto Nacional de Câncer José Alencar Gomes da Silva. Coordenação de Prevenção e Vigilância de Câncer. Estimativa 2016: Incidência de câncer no Brasil. Rio de Janeiro: INCA; 2015.
2. Peto R, Boreham J, Clarke M, Davies C, Beral V. UK and USA breast cancer deaths down 25% in year 2000 at ages 20-69 years. *Lancet*. 2000 May 20;355(9217):1822.
3. Coburn NG, Chung MA, Fulton J, Cady B. Decreased breast cancer tumor size, stage, and mortality in Rhode Island: an example of a well-screened population. *Cancer Control*. 2004 Jul-Aug;11(4):222-30.
4. Nyström L, Bjurstam N, Jonsson H, Zackrisson S, Frisell J. Reduced breast cancer mortality after 20 + years of follow-up in the Swedish randomized controlled mammography trials in Malmö, Stockholm, and Göteborg. *J Med Screen*. 2017 Mar;24(1):34-42.
5. Gebrim LH, Quadros LGA. Rastreamento do câncer de mama no Brasil. *Rev Bras Ginecol Obstet*. 2006 June;28(6):319-23.
6. Fisher B, Montague E, Redmond C, Deutsch M, Brown GR, Zauber A, et al. Findings from NSABP Protocol No. B-04-comparison of radical mastectomy with alternative treatments for primary breast cancer. I. Radiation compliance and its relation to treatment outcome. *Cancer*. 1980 Jul 1;46(1):1-13.
7. Fisher B, Anderson S, Redmond CK, Wolmark N, Wickerham DL, Cronin WM. Reanalysis and results after 12 years of follow-up in a randomized clinical trial comparing total mastectomy with lumpectomy with or without irradiation in the treatment of breast cancer. *N Engl J Med*. 1995 Nov 30;333(22):1456-61.
8. Krag DN, Anderson SJ, Julian TB, Brown AM, Harlow SP, Costantino JP, et al. Sentinel-lymph-node resection compared with conventional axillary-lymph-node dissection in clinically node-negative patients with breast cancer: overall survival findings from the NSABP B-32 randomised phase 3 trial. *Lancet Oncol*. 2010 Oct;11(10):927-33.
9. Wilke LG, McCall LM, Posther KE, Whitworth PW, Reintgen DS, Leitch AM, et al. Surgical complications associated with sentinel lymph node biopsy: results from a prospective international cooperative group trial. *Ann Surg Oncol*. 2006 Apr;13(4):491-500.
10. Morrow M, Harris JR, Schnitt SJ. Surgical Margins in Lumpectomy for Breast Cancer — Bigger Is Not Better. *N Engl J Med*. 2012 Jul 5;367(1):79-82.
11. Giuliano AE, Hunt KK, Ballman KV, Beitsch PD, Whitworth PW, Blumencranz PW, et al. Axillary dissection vs no axillary dissection in women with invasive breast cancer and sentinel node metastasis: a randomized clinical trial. *JAMA*. 2011 Feb 9;305(6):569-75.
12. Freitas-Junior R, Siqueira LB, Carrijo ENA, Lacerda RP, Paulinelli RR, Rahal RMS, et al. Variação temporal do tratamento cirúrgico do câncer de mama em um hospital universitário na região Centro-Oeste do Brasil. *Rev Col Bras Cir*. 2013 June;40(3).
13. Haddad CF. Características clínico-patológicas e estadiamento ao diagnóstico de pacientes com câncer de mama em um centro de saúde do interior de Minas Gerais. *Rev Bras Mastol*. 2014;24(4):103-8.
14. Nunes BA, Siqueira SL, Pereira SM, Pacheco TJ, Pessanha TO, Mendonça SB. Perfil epidemiológico dos pacientes diagnosticados com câncer de mama em Campo dos Goytacazes. *Rev Bras Mastol*. 2012;22(4):117-23.
15. Cintra JRD, Guerra MR, Teixeira MTB. Sobrevida específica de pacientes com câncer de mama não-metastático submetidas à quimioterapia adjuvante. *Rev Assoc Med Bras*. 2008;54(4):339-46.
16. Abreu E, Koifman S. Fatores prognósticos no câncer da mama feminina. *Rev Bras Cancerol*. 2002;48:113-32.
17. Macchetti AH. Estadiamento do câncer de mama diagnosticado no sistema público de saúde de São Carlos. *Medicina (Ribeirão Preto)*. 2007;40(3):394-402.
18. Piatto JR, Carvalho FM, Costa PA, Barros ACS. Biópsia do linfonodo sentinela. In: Barros ACS, Buzaid AC. Câncer de mama: tratamento multidisciplinar. São Paulo: Dendrix; 2007. p.98-121.