THE IMPORTANCE OF BREAST SELF-EXAMINATION AS A DIAGNOSTIC METHOD OF BREAST CANCER

A importância do autoexame como método diagnóstico do câncer de mama

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ABSTRACT

Method: An observational, retrospective, descriptive and cross - sectional study was carried out with data collected from Clínica Basegio, Brazil. The objective of this study was to analyze the importance of breast self-examination (BSE) as a diagnostic method for breast cancer in Passo Fundo, Rio Grande do Sul. A total of 320 patient records were selected from 1987 to 2017, among which 14 were excluded due to insufficient information. **Results:** BSE accounted for 48% of breast cancer diagnoses, followed by mammography and ultrasound. Imaging methods proved to be more effective in diagnosing early stage disease, while BSE detected more advanced tumors. This data was based on the histological characteristics of the tumors, with a significant difference ($p<0.05$) between tumor size and lymph node involvement when compared to BSE and imaging methods. Thus, the survival of the patients diagnosed by mammography and ultrasound was significantly higher than the patients diagnosed by BSE. **Conclusion:** Evidence from this retrospective study suggests that BSE is the prevalent diagnostic method for breast cancer in the State of Rio Grande do Sul. Despite detecting tumors in advanced stages, it is still a fundamental method within the Brazilian reality.

KEYWORDS: Breast cancer; self-examination; survival; mammography; ultrasound.

RESUMO

Método: Estudo observacional, retrospectivo, descritivo e transversal, com dados coletados na Clínica Basegio, Brasil. O objetivo deste estudo foi analisar a importância do autoexame das mamas (AEM) como método diagnóstico para o câncer de mama em Passo Fundo, Rio Grande do Sul. Um total de 320 registros de pacientes foram selecionados de 1987 a 2017, dos quais 14 foram excluídos devido a informações insuficientes. **Resultados:** O AEM foi responsável por 48% dos diagnósticos de câncer de mama, seguido pela mamografia e ultrassonografia. Os métodos de imagem mostraram-se mais eficazes no diagnóstico de doença em estágio inicial, enquanto o AEM detectou tumores mais avançados. Esses dados foram baseados nas características histológicas dos tumores, com diferença significativa ($p<0,05$) entre o tamanho do tumor e o comprometimento linfonodal quando comparados aos métodos de AEM e de imagem. Assim, a sobrevida dos pacientes diagnosticados por mamografia e ultrassonografia foi significativamente maior que a de pacientes diagnosticados por AEM. **Conclusão:** Evidências deste estudo retrospectivo sugerem que o AEM é o método diagnóstico prevalente para o câncer de mama no Estado do Rio Grande do Sul. Apesar de detectar tumores em estágios avançados, ainda é um método fundamental dentro da realidade brasileira.

PALAVRAS-CHAVE: neoplasias de mama; autoexame; sobrevivência (saúde pública); mamografia; ultrassonografia mamária.

INTRODUCTION

Breast cancer is the most common malignant cancer among women in Brazil and the world, excluding cases of non-melanoma skin cancer, and corresponds to 25% of cases of malignant cancers diagnosed each year[1]. The distribution in Brazil shows large regional differences, with higher rates of incidence and mortality in the Southeast and Southern regions and lower rates in the Northern and Northeast regions.

The disease is related to hereditary and environmental factors, and is sporadic in most cases. Its incidence is related to the control of risk factors, early diagnosis and appropriate treatment[2]. Breast changes are detectable during the physical examination performed by both the patient and the doctor, as well as by imaging tests such as mammography (MMG) or ultrasound (US), which are also tools used for its detection.

In breast self-examination (BSE), the patient observes and palpates their own breasts and accessory anatomical structures, in order to detect changes or abnormalities that may indicate the presence of a cancer. During the palpation of the breasts and adjacent structures (nipples, areolas and axillas), lymph nodes and condensations that are also suggestive of neoplasias can be noticed: reduced mobility/movement, adhered, hard and painless.

MMG allows for early detection of changes. According to the National Cancer Institute (NCI), MMG should be performed at the 50 to 69 year age group for people without a history of breast cancer in the family, with an interval of 1 to 2 years between the exams. For those with a history of cancer the recommendation is to start from 35 years of age[3].

Two randomized trials, one conducted in Russia[4] and another in China[5], compared the performance of BSE as an early diagnosis strategy in relation to non-intervention. The studies analyzed approximately 390,000 women and did not find statistically significant differences between the groups, mainly regarding mortality. However, due to epidemiological, economic and cultural differences, these studies can not be applied to the Brazilian reality.

Therefore, it is necessary to investigate the subject considering the Brazilian reality. This article offers support to ratify the importance of BSE as a diagnostic method.

The aim of the study was to compare the available methods for the diagnosis of breast cancer by means of the clinical data collection of patients from the northern region of the Rio Grande do Sul State and to evaluate the importance of BSE in the detection of breast cancer, mainly in aspects related to the prognosis.

METHOD

Population, sample and data collection

An observational, retrospective, cross-sectional study based on the analysis of medical records of patients treated at Clínica Basegio, located in the city of Passo Fundo in Rio Grande do Sul.

The data collection was based on the completion of a questionnaire prepared by the research team, which addressed aspects relevant to the clinic and the patients diagnosis. The questionnaire included aspects such as gender, age at diagnosis, diagnosis, staging, axillary status, surgery (included type of surgery performed), disease free interval, recurrence and survival.

The medical records were randomly chosen from more than 3,000 cases treated in the clinic from 1986 to 2017. The study included 320 randomized files, 14 of which were excluded for not containing complete data which was required to fill out the questionnaire , as well as cases whose patient outcome was unknown until data collection was completed. The final sample of the study consisted of 306 patients. Data were collected by the team between December 2017 and May 2018.

The classification used for data in relation to staging was: tumor size, axillary lymph nodes and metastases, from the seventh edition of the American Joint Committee on Cancer (AJCC).

Statistical analysis

The data collected from the questionnaire were tabulated in the Excel software (Office Plus 2013, Microsoft, Redmond, WA, USA) and in the SPSS program, version 18.0 (SPSS Inc., Chicago, IL, USA) for further analysis. Quantitative variables were demonstrated as mean and standard deviation, while frequency and percentage were used for qualitative values.

In order to verify the associations between the variables, the following tests were used: Kruskal Wallis test (for comparison of means in more than one category) and Mann-Whitney test (for comparison of means between two categories). The [Symbol]^2 test or the Fisher exact test were used to compare categories between groups. Survival analysis was performed using the Kaplan-Meier method. For all statistical analyzes, the level of significance was 5% ($p < 0.05$).

RESULTS

The study initially had 320 records to be analyzed. However, due to the fact that some were incomplete, 14 questionaries excluded. Finally, 306 medical records were included in the study. Among these, 304 were women and two were men. The diagnostic method prevailed as follows (Table 1): 48% of the sample detected the malignant lesion using BSE, while 52% did so with other diagnostic forms, including MMG, US and MRI (imaging methods).

For didactic purposes the diagnostic method with the variables (age, disease free interval, histological type, tumor size, lymph node involvement, surgical treatment, recurrence and survival) was analyzed dichotomously: BSE versus imaging methods.

The main age of patients who used BSE as a diagnostic method was 54.22 ± 13.76, and more than 30% were in the 60+ age group

(Figure 1). The avarage of the patients who used other diagnostic forms was 53.08 ± 12.33. No differences were found between the means (p = 0.678). The disease-free interval of patients diagnosed by BES in years was 6.82 ± 4.96, with little divergence when compared to other diagnostic methods, such as MMG and US, which obtained a mean of 7 ± 3.38 years. No significant difference was found (p = 0.487).

Nine different histological types were computed to compose the study sample. Based on that, four histological types of higher prevalence were considered. The most prevalent histological type detected by BSE was infiltrating ductal carcinoma (108/147), followed by other histological types (19/147), infiltrating lobular carcinoma (15/147) and ductal carcinoma *in situ* (5/147).

Regarding tumor size, there was a significant difference (p <0.001) between the main value diagnosed by BSE and the

other diagnostic methods. The other methods were able to identify smaller tumors than BSE, which detected mainly T2 (61/147), followed by T1 (52/147), T3 (19/147), T4 (12/147) and Tis (3/14), while the order of prevalence by other diagnostic methods was: T1 (80/159), T2 (45/159), Tis (21/159), T3 (12/159) and T4 (1/159), according to Figure 2.

The same pattern was found when the lymph node involvement was analyzed, i.e, the imaging tests obtained a lower percentage of lymph node involvement than the tumors diagnosed by BSE. In the group of patients who detected the lesion using BSE (147), 42% had some lymph node involvement. In the group of patients using other diagnostic methods (159), only 27% had lymph node involvement.

Regarding recurrence, only 76 patients presented recurrence (24.8%): 24 patients had local recurrence and 52 (68.4%) distant recurrence. Among the total number of patients with recurrence, 50 had initially discovered the tumor by BSE (65.8%).
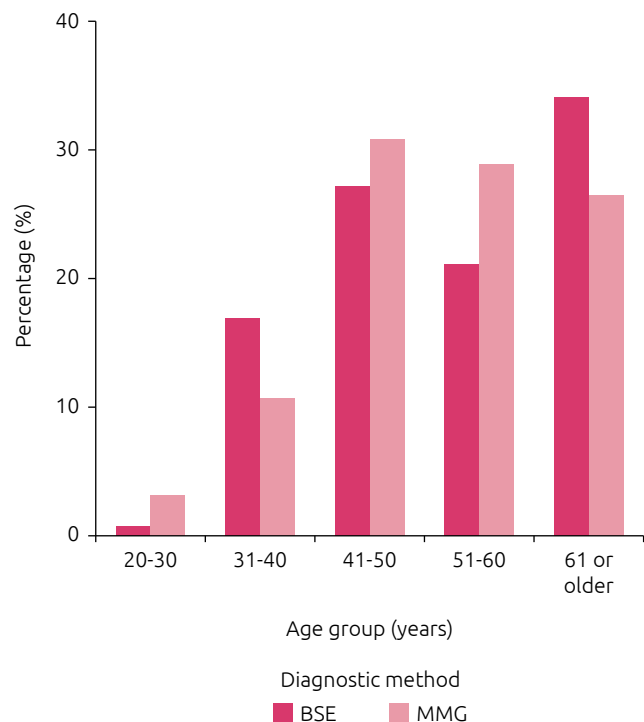
Among the 300 patients who underwent surgical treatment, 169 underwent conservative surgery, with excision of the affected quadrant and lymph nodes, which corresponds to 55.2% of the total. Among these, 70 were diagnosed by BSE (41.1%). The remaining 131 patients underwent radical surgery, corresponding to 42.8%. Among these, 73 (51.7%) were identified by BSE, while 58 (44.3%) were identified by other methods.

Upon analyzing the survival in three groups (survival less than 5 years, between 5 and 10 years and over 10 years) there was a significant difference in the test [Symbol]^2, with a result

Table 1. Diagnostic method of breast cancer of patients, in four categories.

Diagnostic method	Frequency	Percentage	Valid Percentage	Cumulative percentage
BSE	147	48.0	48.0	48.0
Others	10	3.3	3.3	51.3
MMG	134	43.8	43.8	95.1
US	15	4.9	4.9	100.0
Total	306	100.0	100.0	

BSE: breast self-exmaination ; MMG: mammography ; US: ultrassound.

BSE : Breast self-examination; MMG: mammograph.
Figure 1. Relation of detected cases.

Dichotomous diagnosis
(Self-examination versus other diagnostic exams)
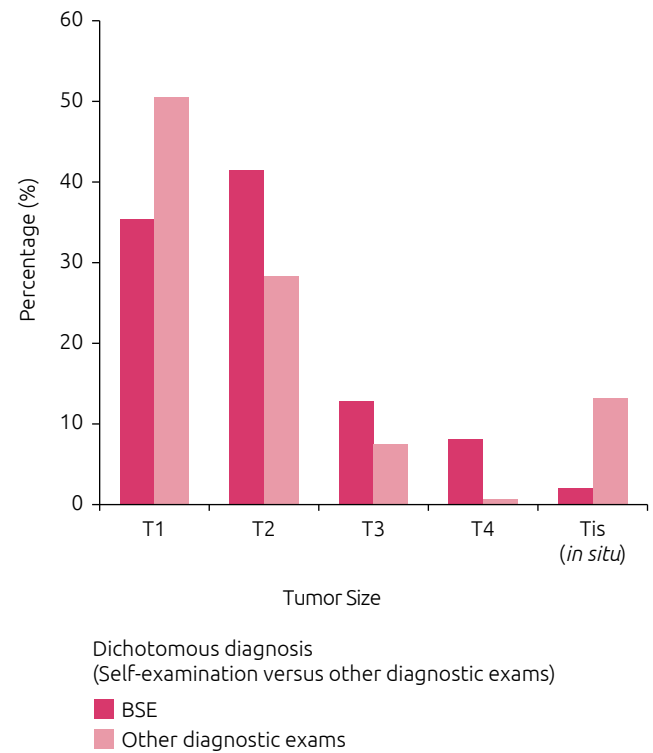■ BSE
■ Other diagnostic exams
Figure 2. Relation of tumor size.

of 0.004. The groups that survived the most had their primary diagnosis performed primarily by MMG, followed by US.

The survival time was statistically (p <0.001) higher among study participants who had the first diagnosis performed by imaging exams, such as MMG and US, being 23.96 years old, with a 95% confidence interval (95% CI) %) 22.72-25.21; compared to the group with BSE as the initial diagnosis, being 19.86 (95% CI: 17.80-2.90) years old (Figure 3).

DISCUSSION

The present study comprehensively compared the profile of the patients who detected the malignant lesion of the breast by BSE and other diagnostic forms, obtaining results compatible with those previously described in the literature, which will be discussed below.

Breast cancer occurs more often in women than in men, around a hundred times more[6], which was compatible with the sample. A significant percentage (48%) of the sample used BSE as a diagnostic method, giving it great importance in the detection of breast cancer in the Brazilian reality.

The average of the diagnosis for all methods was on 53 years, corroborating the risk of developing malignant breast cancer with advancing age, which increases considerably after 50 years[7]. In a study performed at the Hospital das Clinicas de Porto Alegre (HCPA), between 1972 and 2002, with an analysis of 1,607 cases,

Group (self-examiantion versus other diagnostic exams)
- ⌐ Breast self-examination
- ⌐ Other forms-diagnostic exams
- + Self-examination-censored
- + Other forms/diagnostic exams-censored

Figure 3. Survival relationship in years.

a average similar to the present study was observed: 53 years at the time of diagnosis[8].

The predominant age group in BSE was 61 years, while the predominant age group for MMG was 41 to 50 years. In a country of continental dimensions, BSE is a valuable diagnostic method, even if such patients, if they had performed MMG regularly from the age of 40, could have an earlier diagnosis and a better prognosis[9].

It is known that today the most aggressive cancers affect young women, under 50, because of the higher prevalence of risk factors such as hormonal exposure, family history and behavioral and environmental factors. In addition, it is fundamental to know the histological profile of the tumor to analyze the severity of the disease, the treatment options and the prognosis[10-12].

When analyzing the cross-referenced data of this sample and linking it with the clinic of the cases, it is possible to notice that BSE was more prevalent only in histological types with worse prognosis, for example, infiltrating ductal carcinoma, which has the worst indices of malignancy, such as metastases, affected lymph nodes and recurrence[13]. Generally, when these tumors are identified by BSE they have already become pre-malignant lesions - such as comedocarcinoma ductal carcinoma *in situ* - and, in comparison to other diagnostic methods, are discovered when tumor sizes are larger, usually from T214.

The data represent the fundamental role of MMG in detecting smaller tumors with better prognosis (without compromised lymph nodes and less aggressive histological type) due to early diagnosis. However, it does not exclude or decrease the 48% of the cases diagnosed by BSE in this study, which is still a fundamental method.

This high percentage is in line with the guidelines provided in the Ministry of Health's Guideline on Early Detection of Breast Cancer[15]. BSE is a considerable practice not only because of its high percentage, but it gains argumentative force when analyzing the socioeconomic characteristics of the patients. Despite being a growing practice[16], MMG in Brazil still fails to reach all the women who need the exam, either because they are unaware of the importance of self-care or the centralization of mammography devices in the reality of the Unified Health System[17]. Not encouraging the practice of BSE is limiting an easy-to-access, low-cost and affirming tool for the women and their bodies.

Conservative surgical treatment consists of quadrantectomy with lymphadenectomy (when indicated, a study of the sentinel lymph node is always performed) and was predominant in the majority of the cases of this study, around 55.2%. The result obtained is similar to that found in the study perfofrmed at the *Instituto de Mama* in Ubá, Minas Gerais, between 2001 and 2014, with an analysis of 647 patients, in which 67% of the patients underwent conservative surgery while only 33% underwent mastectomy[18].
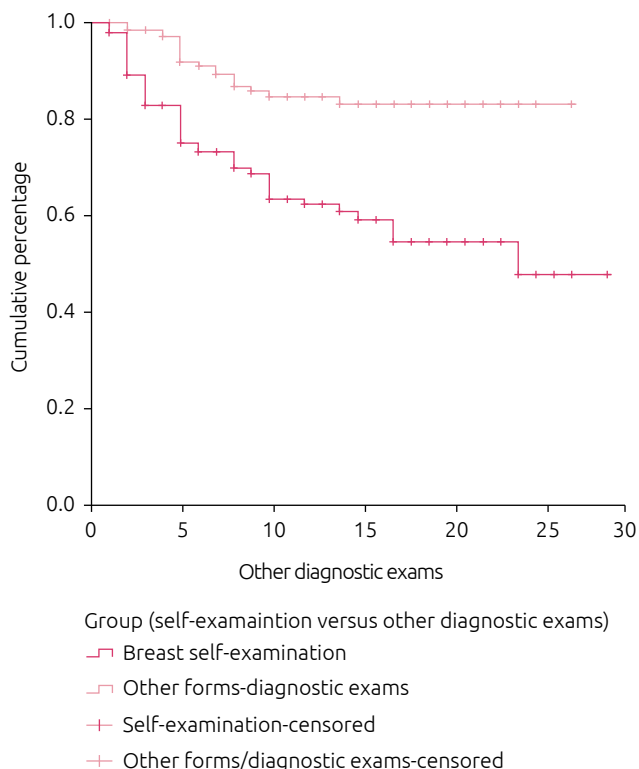
In the present study, it was observed that tumors that were at an advanced stage were most often diagnosed by BSE, in contrast to the other diagnostic methods (US, MMG, MRI), which together resulted in 44.7%[19] . According to a study conducted by Malmgren et al.[20], in the United States, in 2012, with an analysis of 2,579 cases, the individuals diagnosed by BSE did so in late stages of the disease, requiring radical mastectomy as a treatment

The vast majority of patients did not present recurrence and, among the few that presented, there was a predominance of BSE. Considering that most of the malignancies diagnosed by BSE were in a more advanced stage, there is an increase in the likelihood of recurrence in these patients, even with the attempt of radical or conservative surgical cure, although, in a study published in the New England Journal of Medicine , this difference between the presence or absence of recurrence depends not on the type of surgery or the initial diagnostic method of the tumor, but on the type of therapy associated with surgery (such as hormone and chemotherapy) in cases of invasive disease, which could be better analyzed in later studies[21]. In the present study, those who had an initial diagnosis by BSE had a higher prevalence of recurrence compared to those diagnosed by other methods. However, no studies were found to corroborate this analysis.

According to Vicini et al.[22], in a survey conducted in 2003, 4 to 20% of patients with breast cancer presented local recurrence, which is confirmed by the present study, with 8%. On the other hand, regarding this analysis, local recurrence is related to the type of surgery - the conservative ones have a higher incidence of recurrence than the radical ones -, and the occurrence or absence of distant disease[23]. Nevertheless, based on data analysis, there was no statistical difference between the type of recurrence and diagnostic form.

The data found in relation to the greater survival in the group whose diagnosis was first performed by imaging methods (US and MMG) corroborates with the literature. Some studies describe the use of MMG and its association with a reduction in mortality, since it has the capacity to diagnose neoplastic lesions in the early stages, before they are large enough to be palpable and, therefore, an excellent examination for secondary prevention. The routine use of this test is, therefore, fundamental in the diagnosis of breast cancer in women over 50 years of age[19,24,25].

The practice of BSE has been a subject of debate. It was mainly advocated in the 1950s when there were no other effective methods for the early and asymptomatic diagnosis of nodules, making late diagnosis of breast neoplasms the most common pattern. Unlike MMG, BSE was not able to reduce breast cancer mortality rates in two large studies conducted in China and Russia. In addition, BSE considerably increased the number of unnecessary biopsies for benign nodules. BSE may not identify the nodules because they are very small or because they are performed inadequately, resulting in a false sense of security[19,26-2

The limitation of this analysis is due to it being a retrospective study, which is susceptible to errors in medical records, as well as not having an active follow-up in order to know which patients died due to cancer. In addition, the database used to conduct the research came from a breast surgery clinic. For this reason, many patients with more advanced stage cancers and with no possibility of surgical treatment are underestimated in the case-by-case analysis.

It is now known that MMG is the most important imaging method for the early diagnosis of breast cancer, since it is the only one capable of decreasing the mortality related to the disease. Therefore, BSE is not recommended as the only screening method and its joint performance with MMG is still controversial.

The results obtained in this study demonstrate that this practice is still prevalent in the population, and most frequent in the studied group. BSE usually detects advanced disease, which calls into question the incentive of this practice. In spite of this, we still agree with the importance of such method in our reality, not in any way dispensing with the periodic accomplishment of MMG.

Women should be encouraged to take abnormalities found at the EMA to the doctor's office and they should be instructed to perform the test in order to differentiate what is abnormal and to understand that BSE should not be used as a substitute for MMG.

ACKNOWLEDGMENTS

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