Research Article

PREVALENCE OF MAMOGRAPHIC FINDINGS IN A TRIENNIAL MAMOGRAPHY SERIES OF 2012 TO 2015

Andréia Farias Alquimim[1*], Gustavo Mazon[1], Marina Silveira Rezende[1], Arthur Meneghin Domingos[1], Ana Cristina Macedo Carvalho[1], Bárbara Pessoa de Matos[2], Márcio Raimundo de Faria[3], Flávio Galvão Lima[3], Tais Folchito Maglioni[3], Renato do Amaral Mello Nogueira[3], Michelaine de Freitas Vasconcelos Gomes Nogueira[3], Augusto Castelli von Atzingen[4]

Abstract

Breast cancer is the leading cancer affecting the female population, and mammography is very important as screening test to make early diagnosis, the essential BIRADS classification in evaluating the need for further investigation. Thus, this study aims to determine the prevalence of findings in mammography examinations in the South of Minas Gerais in Patients of Breast Cancer Information System, based on BIRADS classification in women who undergo mammography in our midst. In order to scale the involvement of the population served, as well as cases of breast cancer. For a retrospective study was performed both in the period from August 1, 2012 to September 01, 2015, which selected 13 814 mammographic reports of patients seen by CISAMESP. For data analysis was used database SISMAMA / CISAMESP. the prevalence of the findings through the BI-RADS classification, in addition to analyzing the association with age was estimated. It was observed that 80.15% of the patients studied were normal, 6.73% had inconclusive results, and 13.84% of the breasts with significant changes were in patients aged less than 50 years. Given this and the analysis of other similar studies, it appears that a large portion of suspicious changes found in women over age. However, a significant portion of mammograms that required further evaluation was women under 50 years of age.

INTRODUCTION

According to Martin (2012), breast cancer has been considered a serious public health problem, since it is considered as the most frequent neoplasm among women worldwide. In 2013, INCA estimated 580 thousand new cases in Brazil by 2014. According to Facina (2014), this estimate is important in the planning and promotion of public policies aimed at reducing mortality and morbidity of the affected population.

In view of the great public health problem it represents, as currently established prevention measures, we have clinical breast examination, breast ultrasonography and mammography, the target of the present study, which is the reference test for breast cancer screening and Is performed according to the patient's age and other risk factors.

According to Urban (2012), breast cancer mammography screening is based on the premature detection of the tumor, even before it becomes palpable, which favors effective treatment and, consequently, an increase in survival. According to Nascimento (2010), this is an examination that provides assistance to physicians, since their findings guide these professionals to follow the investigations through biopsy or periodic control, depending on the BI-RADS (Breast Imaging Reporting and Dated System)

Such a classification system, according to Koch (2010), was developed by the American College of Radiology and introduced in 1993 for mammography and updated in 2003, with the purpose of standardizing the reports and guiding the doctors about the chances of a certain lesion being

At the national level, in 2009, SISMAMA was created, a database of all regions, which uses the standardized computerization of mammography applications and results performed by SUS.

According to Rodrigues (2013) the system must obtain data on breast cancer screening in the country, acting as an SUS subsystem subsystem, acting according to the BIRADS system produces reports in which the radiological findings are reliable to categorize, being An indispensable tool for the management of the public health system. Another relevant data for the effective functioning of the system is the implementation of audits of results in each mammary diagnostic center to guarantee the reliability of the results as well as the transfer of these results.

In view of the importance of mammography for the early detection of breast cancer and orientation of activities in the face of breasts findings, the present study aims to know the prevalence of mammography findings in the Southern Region of Minas Gerais in Patients of the Information System of the Breast Cancer (SISMAMA), based on the classification of BIRADS in women who undergo mammography in our country.

In addition, to recognize the main radiological signs in altered mammograms, the quantification of each one of its classes, thus being able to predict the probability of a certain finding in our environment and the validity of this method in the prediction of malignant lesions.

[1]Resident doctor of Radiology and Diagnostic Imaging at Samuel Libânio Clinical Hospital in Pouso Alegre - MG
[2]Resident doctor of Radiology and Diagnostic Imaging Beneficência Portuguesa Clinical Hospital in São Paulo-SP
[3]Radiologist-preceptor at the Samuel Libânio Clinical Hospital in Pouso Alegre - MG
[4]Radiologist-preceptor at the Samuel Libânio Clinical Hospital, PhD from the Federal University of São Paulo and lecturer at the Universidade do Vale do Sapucaí and at the Federal University of Alfenas

System (SISMAMA). In order to size the affected population, as well as cases of breast cancer.

MATERIALS AND METHODS

A retrospective study was conducted between August 1, 2012 and September 1, 2015, which selected 13,814 consecutive mammography reports filed in the Quickreport program, which followed the BIRADS standardization, adopted as a consensus model for the mammographic report by the Brazilian College of Radiology since 1998. The population in question refers to patients evaluated by means of mammograms made in the municipalities of the South of Minas served at the Intermunicipal Health Consortium (CISAMESP), in individuals of different ages who were investigated for a clinical suspicion or for prevention routines. To analyze and then make it possible to compare the results with other studies, the patients were grouped according to their ages, in two groups: over 50 years and under 50 years. Being that 251 examinations were performed in children under 50 years and the rest in over 50 years, age of cut for screening recommended by the Ministry of Health. As inclusion criteria were considered: All patients who underwent mammography from August 1, 2012 to September 1, 2015 at CISAMESP. And as Exclusion criterion: patients with incomplete or illegible data.

Data collection was performed through the analysis of the SISMAMA / CISAMESP database. Because it is a bilateral examination, for each patient the most serious BIRADS was considered according to the following hierarchical relationship: Category BIRADS 6> 5> 4> 3> 2> 1. Thus, a BIRADS corresponds to each patient. Because it was a cross-sectional study based on mammographic reports, and the same did not have information regarding other variables such as level of schooling, family history, among others, only the BIRADS classification and the age of the patients were used as variables, Respectively, as qualitative ordinal and quantitative discrete.

radiologists members of the Brazilian College of Radiology, with qualification for mammographic report

RESULTS AND DISCUSSIONS

After having access to the 13,814 reports of mammograms performed, the results were analyzed according to the BIRADS classification, adopted by the Brazilian Society of Radiology, as presented in table 3 below, according to what was mentioned in the study methodology

Thus, of the 13,814 patients that were analyzed, 136 (0.98%) patients underwent a diagnostic examination, that is, they had symptoms, and 13,678 (99.02%) patients were screened.

Among the sample, 251 (1.82%) individuals were younger than the minimum age, 50 years of age. Table 4 below shows the frequency of the BIRADS classifications found in the exams analyzed:

The main categories of radiological classification found in the patients studied, according to table 4, were the BI-RADS classifications I and II, corresponding to 5275 and 5797 patients, respectively, which together represent 80.15% of the total evaluated. Regarding the number of patients with inconclusive evaluation, that is, classified as BI-RADS 0, a percentage of 6.73% of all the patients evaluated was identified.

Of the patients studied, 19.85% required complementary evaluation, either by means of an additional evaluation with another exam (6.73%), a semestral control with mammography (12.65%) or by pathology to confirm whether there is or not A neoplastic disease (0.47%). Excluding inconclusive breasts, we had 13.12% of breasts with significant findings, corresponding to 1748 breasts classified as BI-RADS III, 59 breasts with BI-RADS IV, 6 breasts with BI-RADS V.

Table 3 BIRADS Classification System

Classificação	Significado	Conduta
BIRADS 0 Achados inconclusivos.	Incompleto.	Avaliação adicional (ecografia, magnificação ou compressão localizada).
BIRADS I Achados mamográficos negativos.	Normal. 0,05 % de chances de malignidade.	Acompanhamento normal.
BIRADS II Calcificações vasculares, calcificações cutâneas, fibroadenoma calcificado, outras calcificações benignas, cisto oleoso, linfonodos intramamários.	Geralmente benigno. 0,05 % de chances de malignidade.	Acompanhamento normal.
BIRADS III Nódulo de baixa densidade, contorno regular, limites definidos e dimensões não muito grandes, calcificações monomórficas e isodensas.	Provavelmente benigno. Até 2 % de chances de malignidade.	Dois controles semestrais seguido de dois anuais.
BIRADS IV Nódulo de contorno bocelado ou irregular e limites pouco definidos, microcalcificações com pleomorfismo incipiente, densidade assimétrica, algumas lesões espiculadas.	Suspeito. 3-94 % de chances de malignidade.	Biópsia.
BIRADS V Nódulo denso e espiculado, microcalcificações agrupadas e/ou pleomórficas seguindo trajeto ductal e/ou ramificadas.	Alta sugestão de malignidade. Mais de 95 % de chances de malignidade.	Biópsia.
BIRADS VI Achados com comprovação de malignidade prévia.	Malignidade comprovada.	Tratamento e estadiamento.

Source: Brazilian College of Radiology.

All the selected exams were carried out by the Brazilian College of Radiology, with standard incidence (cranio-caudal and mid-lateral-oblique) and complementary incidences whenever necessary. Mammograms were interpreted by

Augusto Castelli von Atzingen., Andréia Farias Alquimim., Gustavo Mazon., Marina Silveira Rezende., Arthur Meneghin Domingos., Ana Cristina Macedo Carvalho., Bárbara Pessoa de Matos. Márcio Raimundo de Faria., Flávio Galvão Lima., Tais Folchito Maglioni., Renato do Amaral Mello Nogueira and Michelaine de Freitas Vasconcelos Gomes Nogueira

Table 4 BIRADS ClassificationFrequency

Classificação	Frequência	Porcentagem
0	929	6,73%
I	5275	38,19%
II	5797	41,96%
III	1748	12,65%
IV	59	0,43%
V	6	0,04%
VI	0	0%

Source: The author

Another important point to be mentioned is that of the 65 patients who needed complementary biopsy evaluation, nine were less than 50 years old when they underwent the test, that is, 13.84% of patients with suspected malignant disease benefited from An early screening.

The results of the present study were compared to those of other similar studies, emphasizing three other studies for this purpose, referring to the works of Rodrigues *et al* (2013), Fernandes *et al* (2010) and Fontes (2015) carried out in Goiás, Acre and Santa Catarina, respectively, three different regions of the country to compare with results found in the southern region of Minas Gerais. The results found in the present study showed similarities with the other comparative studies, despite the epidemiological differences to which they were subjected

In the current research, a higher prevalence was found in the BI-RADS I and II categories, corresponding to 80.15% of the patients studied, and the majority of those who underwent mammography in the period considered were over 50 years old (98.18%). In the study by Rodrigues *et al* (2013), 55.8% were found with BI-RADS I and 30.4% with BI-RADS II, the first category being more prevalent than the second, but both were also The most found, but it should be noted that there was a difference in the age group of the patients, and 43.3% were less than 50 years old. Fernandes *et al* (2010) found 41.1% of patients with BI-RADS I and 37.9% with BI-RADS II.

Finally, the study of Sources (2015) also found a higher prevalence in BI-RADS I and II categories, corresponding to 85.3% of the patients studied. However, this study diverged from the present study regarding the age of the patients who underwent mammography, Where 36.57% were under 50 years of age.

Regarding the inconclusive reports, in the south of Minas Gerais these were evidenced in 6.73% of the patients.

This corresponds to the work of Fernandes (2010), which obtained 4.4% of inconclusive findings. However, these results are in agreement with the findings of Rodrigues *et al* (2013), who found 10.01% inconclusive and Sources (2015) tests, which found 12.9% of inconclusive tests.

Regarding the findings that modify the diagnostic strategy, we found in the present study 12.65% with BI-RADS III, 0.43% with BI-RADS IV and 0.04% with BI-RADS V. One relevant point mentioned above Is that 13.84% of the patients who should continue the evaluation with pathology were less than 50 years old. Comparing these data, Rodrigues *et al* (2013) found 2.44% with BI-RADS III, 1.21% with BI-RADS IV and 0.11% with BI-RADS V.

In the data of Fernandes *et al* (2010)), The BI-RADS III classification corresponded to 14.4% of the exams, BI-RADS IV with 1.8% and BI-RADS V with 0.4%. However, the study by Fernandes *et al* (17) found that 49.7% of patients at risk of malignancy were younger than 50 years. In the study of bridges (2015), the results showed 1.3% with BI-RADS III, 0.3% with BI-RADS IV and 0.01% with BI-RADS V. One relevant point found in this study is that With the study by Fernandes (2010), was that 37.5% of the patients who should continue the evaluation with anatomopathology were less than 50 years old.

As a limitation, the present study presents the possibility of a same BI-RADS III result being repeated, since such patients should be checked every six months.

Contrary to Ordinance 1,253 of the Ministry of Health mentioned in the theoretical framework, which removes the right of women under 50 years of age to detect and therefore treat early breast cancer or a pre-neoplastic lesion, whereas Limits the access to the mammography examination for this population, the importance of the early prevention was evidenced, and this includes patients under 50 years of age.

This argument is justified by the fact that more than 13% of the patients who should continue the biopsy diagnostic investigation, because they have some risk of presenting a malignant lesion or that would evolve to that, evidenced in the mammograms of the present study and more 37% of the patients in the other studies analyzed were less than 50 years old.

FINAL CONSIDERATIONS

The findings of the present study show, in agreement with other similar researches, that the great majority of the patients did not present significant alterations in the mammographic exams, that in a little more than 6% of the evaluated patients, mammography was not enough to give a conclusive opinion with regard to the exclusion of suspected malignancy, and 13.12% of the sample had some degree of suspicion.

In addition, the data show that the determination of the age of 50 years should be reviewed as a cutoff point to start mammographic screening, since 13.84% in the present study and more than 37.0% in similar studies of the population that needed of a more enlightening evaluation through biopsy, in order to obtain an early diagnosis or to exclude it, were below this age group.

Thus, it is suggested in the present research that studies with women who are not at high risk in the age group of 40 to 49 years are necessary, in order to reconsider the determination of the ideal age to start a breast cancer screening program based on mammography

Reference

AMERICAN COLLEGE OF RADIOLOGY. The ACR breast imaging reporting and data system (BI-RADS) [web source]. November 11, 2009.

ANDERSON, B.O.; SHYYAN, R.; ENIU, A. *et al.* Breast cancer in limited-resource countries: an overview of the Breast

Health Global Initiative 2005 guidelines. *Breast J.* 2006;12Suppl 1:S3-15.

BRASIL. Ministério da Saúde. Secretaria de Atenção à Saúde. Portaria n° 1.253, de 12 de novembro de 2013. Diário Oficial [da] República Federativa do Brasil, Poder Executivo, Brasília, DF, 13 de novembro de 2013. Seção 1.p. 128.

BRASIL. Ministério da Saúde. Instituto Nacional de Câncer. Estimativa 2009: incidência de câncer no Brasil. 2010.

BRASIL. Mamografia para o rastreamento do câncer de mama em mulheres com idade abaixo dos 50 anos, entre 50 e 69. Comissão Nacional deIncorporação de Tecnologias do SUS. Secretaria de Ciência, Tecnologia e Insumos Estratégicos. CONITEC.N° XXX.Abril / 2015.

CONSTANTINI, M.; BELLI, P.; LOMBARDI, R. Characterization of Solid breast Masses. Use of the Sonographic Breast imaging Reporting and Data System Lexicon. *J Ultrasound Med.* 2006; 25:649-659.

FACINA, Taís; Estimativa 2014-câncer de mama no Brasil. Revista brasileira de cancerologia, Rio de Janeiro, v.60,n. 1,march 2014.

FEIG, S.A. Screening mammography: a successful public health initiative. Rev Panam Salud Publica. 2006.

FERNANDES, D.A.; SILVA, S.M.M.; DAPONT, A.M.P. Análise da prevalência de exames mamográficos realizados no sistema público de saúde do Estado do Acre, Amazônia, Brasil, utilizando-se a classificação BI-RADS. *RevBrasMastologia*. 2010;20(2):71-75.

FREITAS, F. Rotinas em ginecologia. 6ª ed. Porto Alegre: Artmed, 2011. 736 p.

FONTES, Gilfranklin Silva Queiroz. Prevalência de alterações mamográficas em uma série de exames realizados no Hospital Nossa Senhora da Conceição no ano de 2012, em Tubarão/SC. Revista da AMRIGS, Porto Alegre, 59 (3): 217-222, jul.-set. 2015.

HENDRICK, R.E.; HELVIE, M.A. United States Preventive Services Task Force screening mammography recommendations: science ignored. *AJR Am J Roentgenol*.2011;196(2):W112-6. DOI:10.2214/ AJR.10.5609.

INCA, Instituto Nacional de Câncer José Alencar Gomes da Silva. Estimativa 2014: incidência de câncer no Brasil. Rio de Janeiro: INCA;2014. 124 p.

KOCH, H.A.; CASTRO, M.V.K. Qualidade da interpretação do diagnóstico mamográfico. Radiol Bras.2010;43(2):97-101.

MARTINS, C.A.; GUIMARÃES, R.M. *et al*. Evolução da mortalidade por câncer de mama em mulheres jovens: desafios para uma Política de Atenção Oncológica. *RevBrasCancerol*. 2013.

MARTIN, Amanda da Fontoura San; NOGUEIRA Gustavo; SANTOS Iuri Pereira dos; BORGES Daniela Teixeira; Determinação do perfil das pacientes que realizam mamografia em Santa Cruz do Sul-RS a partir do sistema de informação do controle de câncer de mama (SISMAMA) In: Anais do III Salão de Ensino e de Extensão; 2012. Santa Cruz do Sul.

NASCIMENTO, J.H.R. Acurácia dos achados ultrassonográficos do câncer de mama: correlação da classificação BI-RADS® e achados histológicos. *Radiol Bras*.2010;42:235-40.

RODRIGUES, D.C.N.;FREITAS-JUNIOR, R. Avaliação do desempenho dos centros de diagnóstico na classificação dos laudos mamográficos em rastreamento oportunidade Sistema Único de Saúde (SUS). *Radiol Bras*. 2013 Mai / Jun;46(3):149-155.

THULER, L.C.S.; MENDONÇA, G.A. Estadiamento inicial dos casos de câncer de mama e colo do útero em mulheres brasileiras. *Rev Bras Ginecol Obstet*. 2005;27(11):656-60.

URBAN, L.A.B.D.; SCHAEFER, M.B. *et. al*. Recomendações do Colégio Brasileiro de Radiologia e Diagnóstico por Imagem, da Sociedade Brasileira de Mastologia e da Federação Brasileira das Associações de Ginecologia e Obstetrícia para rastreamento do câncer de mama por métodos de imagem. *Radiol Bras*. 2012 Nov/ Dez;45(6):334-339.

****