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Frequency, characteristics, type of lesions and follow-up of Byrds 3 lesions in full digital mammography in the breast clinic of Cancer Institute during one year

## Frequency, characteristics, type of lesions and follow-up of Byrds 3 lesions in full digital mammography in the breast clinic of Cancer Institute during one year

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### Abstract

**BI-RADS-3 is a category in mammography for probably benign lesions and for which periodic fallow-up with repeat imaging is recommended. A lesion designated as BI-RADS-3 should have less than a 2% chance of becoming malignancy. With this study we evaluated the frequency of BI-RADS-3 lesions in mammography reports of Cancer Institute of Tehran university of medical science during 1 year, September 2016 to September 2017, their lesion types (microcalcification, mass, asymmetry) and the recommended fallow ups. Of 5972 mammograms reviewed over a 1-year period between September 2016 to September 2017 a total of 481 were diagnosed as BI-RADS-3. (8%) All of them were recommended to come back for short term fallow up. (6 month or 1 year later) Most of these patients were lost to fallow up, leaving 71 patients. (14%) Of these 71 lesions, 29.6% were masses, 25.4% microcalcifications and 42.3% were asymmetries, which was more frequent. Of 71 lesions, 24 (33.8%) remained stable, 10 lesions had an upgrade in their BI-RADS status (14.1%) and the majority of them (47.9%) had a decrease in their BI-RADS status. Of 71 lesions, 10 had changes prompting biopsy. We had access to 9 of these biopsy documents. 3 cancer (4.2%) and 6 benign lesions was detected and the malignancy rate in our study was 4.2% which is more than 2%.**

**Keywords: Cancer, BI-RADS, Breast Clinic, Characteristics**

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### Introduction

Breast cancer is the most common malignancy in women and is considered as the second cause of cancer-related death in women. It is one of the few malignancies that will have a good prognosis if diagnosed early (1) Breast tissue in women naturally grows at different stages. Including the monthly period of puberty, pregnancy and breastfeeding, it is influenced by various hormonal

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factors. Benign breast disorders and diseases have a wide clinical and pathological spectrum. (2) Breast cancer is a type of hormone-dependent disease. This cancer does not occur in women whose ovaries are non-functioning and have never received replacement estrogen (2) and (3) It is believed that hormonal factors play an initiating or contributing role in the development of breast cancer. Increasing exposure to estrogen increases the risk. Breast cancer is associated (3). Cancer is a pathogenic process and it starts when the abnormal cell changes its shape due to the genetic mutation of the cellular DNA (4) Women who have cancer in one breast are at risk of developing cancer in the other breast, which is close to is 0.5% per year (5) The prevalence of breast cancer increased slowly and steadily from 1990 to 1998 and then reached a constant rate until 2003 (7) The existence of international changes in the incidence of cancer are some of the most important It has provided guidance to explain the effect of hormonal carcinogens. Out of every 9 women who live in North America and live up to the age of 80, invasive breast cancer is seen in one person. The risk of Asian women getting breast cancer is one to one tenth of that of Northern and European women (6). This cancer accounted for more than 10% of the cases in 2002, and in 2004, it was about 1.13% of all cancer cases (7-9). and its prevalence varies from 5% in Japanese to 30% in Dutch (3) Breast cancer in Iran constitutes 4.21% of malignancies in women and its prevalence is 4.22 per 100,000. Malignancies of epithelial breast origin are the most common cause of cancer in women (except skin cancer), accounting for about one-third of all cancers in women (9-11). In 2004, there were 216,000 cases of invasive breast cancer and 40,000 deaths in the United States. Mortality caused by breast cancer has started to decrease (12-14). Due to the high prevalence and the physical, mental and economic-social consequences of this disease in the population of women and their families, it is necessary to investigate more about the different aspects of this disease in order to improve the results. And the increase in life expectancy and quality of life of the patients is clearly visible (14-16). There are different methods for breast cancer screening. The different screening methods are:

- 1- Breast Self-Exam (B.S.E) The results of valid studies show that BSE cannot be performed. have a role in reducing mortality (17-19)
- 2- Clinical Breast Exam, if CBE is taught carefully and followed by adequate monitoring, it can be considered as a very valuable screening test (19-21) The sensitivity of C.B.E is between 24-63% and its specificity is 5.95-96%. The present study was conducted with the aim of investigating the cases and the rate of cancer in the lesions that were obtained by mammography in Imam Khomeini Hospital (RA) 3 RADS-BI.

## Materials and Methods

The current study is a case series. The study population was people who had mammography done between 1395 and 1396 and the research environment was Imam Khomeini Hospital Cancer Institute (RA). Data collection method and specifications of data collection tools to extract data by referring to the database of the mammography department of Cancer Institute, first all the

Frequency, characteristics, type of lesions and follow-up of Byrds 3 lesions in full digital mammography in the breast clinic of Cancer Institute during one year mammograms performed during one year (October 1995 to October 1996) were collected (21-23). Then 3 cases of BI-RADS were reported. It was separated from them and the information of the patients was extracted and a table of variables including: age; family or personal history; type of mass lesion, microcalcification and (asymmetry); characteristics of the lesion shape, margin and density of the mass or morphology and spread of microcalcification composition; direction involved; the location of the lesion and accompanying findings were adjusted (24-26). All these people were advised to go for short-term follow-up. Of these people with 3 BI-RADS, people who went for follow-up up to 15 months later were included in the study and the date of the second visit, the changes in BIRADS, the type of follow-up were recorded, and in the case of a follow-up biopsy, the results of the biopsy were asked over the phone. From October 1995 to October 1996, they were evaluated by mammography were included in the study and we did not distinguish between screening or diagnostic mammography (27-29). The report of all the examined mammograms was approved by the respected professors of the mammography department, then the 3 reported BI-RADS cases were separated from them and the patients' information was extracted; This information includes: age, family or personal history (30); The type of lesion (microcalcification mass and (asymmetry; characteristics of the lesion shape, margin and density of the mass or morphology and spread of microcalcification (composition; involved side; location of the lesion and associated findings) was like lymph node) and the table of variables according to the report written in mammography (31-33). All these people were advised to go for a short-term follow-up. These people were followed up between 6-18 months later. From this number of people with 3 BI-RADS, people who did not come for follow-up until 18 months later were excluded from the study, and the follow-up information of the people who came (including: the date of the second visit, changes (34-36), BIRADS, type of follow-up and in case of biopsy, The results of their biopsy were entered in the table of variables. The next follow-up could be repeated mammography or ultrasound (37-39), or if necessary, a biopsy of the lesion. If a sample is needed, if the lesion was seen in the ultrasound, according to the cheap to be easier and more comfortable for the doctor and the patient, the biopsy was performed under the guidance of ultrasound (40), and otherwise it was performed under the guidance of mammography. Tissue sampling was performed and the sample was sent to pathology. And we asked them to send us the report, and according to the pathology report, we judged whether the lesion was malignant or not (41-43). Then the relationship between these findings was evaluated. After collecting the required information, using SPSS version 25 software (43-45), Analyzing the collected data, we paid for it qualitative release of frequency and percentage of frequency and for the only quantitative variable which was age, the mean and median were calculated and then the relationship between the findings was checked by statistical tests (45-47).

## Discuss

## Mammography

Mammography screening results in a 30% reduction in breast cancer mortality in women aged 50-69 years, this figure for women aged 40-50 years is about 17% in the right conditions, the sensitivity of this test is between 70-90% and the average is 80%, which depends on several factors, including the age of the patient, the size of the lesion and the density of the breast tissue, hormonal status, the overall quality of the image, and the skill of the radiologist. About 99-94% reported the specificity of this test. In mammography, the rate of false negatives in young people is higher than in the elderly (46-48). The rate of false negatives is 25% for women aged 40-50 and 10% for women over 50 years old in all systems. Breast cancer screening services in the world have mammography as a key test and it has been added to it in accordance with CBE conditions (49) screening with mammography has been very successful in detecting early symptoms and preventing deaths with early treatment, but the impact It depends on the interpretation of the mammogram reader (50-52). Due to the inherent variability in the interpretation of mammograms, in 1993 (53), the American College of Radiology established the BIRADS (Breast Imaging Reporting and Data System) grading system in order to standardize the interpretation of mammograms and raise introduced the level of two-way communication between radiologists and clinical physicians (54-56).

Based on this division, the final results of mammography, sonography and breast MRI reports are in the form of one of these groups:

| <b>BI-RAD class</b> | <b>Description</b>               | <b>Probability of malignancy (%)</b> | <b>Follow-up</b>                             |
|---------------------|----------------------------------|--------------------------------------|--|
| 0                   | Needs additional evaluation      |                                      | Diagnostic mammogram, ultrasonographic image |
| 1                   | Normal mammogram                 | 0                                    | Yearly screening                             |
| 2                   | Benign lesion                    | 0                                    | Yearly screening                             |
| 3                   | Probably benign lesion           | < 2                                  | Short interval follow-up                     |
| 4 <sup>a</sup>      | Suspicious for malignancy        | 20                                   | Biopsy                                       |
| 5                   | Highly suspicious for malignancy | 90                                   | Biopsy                                       |
| 6                   | Biopsy-proven malignancy         | 100                                  | Treatment                                    |

BI-RAD = Breast Imaging Reporting Data System  
<sup>a</sup> The ACR recommends that each site be divided into three subcategories: 4A, low suspicion; 4B, intermediate suspicion; and 4C, moderate concern but not classic for malignancy.

BIRADS was created with the goal of minimizing uncertainty in the diagnosis and prognosis of breast cancer among patients and physicians (56-58). While BIRADS has been a great help in classifying breast imaging findings for patients and doctors, there is still diagnostic ambiguity when it comes to 3 BIRADS.

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3 BIRADS is a category defined as possibly benign lesions that require short-term follow-up (usually 6 months later). When a lesion scores BIRADS3, the probability of malignancy must be below 2% (58-60). We do not expect a lesion that falls into this category to be malignant, however, radiologists tend to document the stability of the lesion (61-63). Although placing patients in this category helps the radiologist to report the stability of the lesion with more confidence, staying in this group can cause great anxiety for patients who must have short-term follow-ups for an ambiguous lesion (64). Especially those patients whose lesions are eventually biopsied. (65-67) Patients may remain in purgatory until two years later when the lesion is found to be benign. (12,15). BIRADS category 3 refers to lesions that are highly likely to be benign. (68) However, there may still be some fear among patients of the possibility of malignancy, even at a low rate (67-69). Previous studies have also shown that there is wide variation in the selection of 3 BIRADS reports and post-diagnosis recommendations (70-72).

## Conclusion

BIRADS 3 report rate in our center was in the range of percentages reported in other centers of the world, but the percentage of malignant lesions was higher than 2% and it was a higher percentage than other centers in the world. that this can be due to various reasons, such as the different effect of genes and environment on the speed of the lesion to malignancy, and in this case, shorter follow-ups are needed, or due to the low percentage of people returning and the final sample size being small; In both cases, more studies with a larger sample size are recommended. Overall, the literature has shown that there are many barriers to follow-up in imaging. Factors that decrease follow-up tolerance are low education level, low patient concern about cancer, poor public health and race. (41). Compared to other studies, in the end, follow-up information was available for a small percentage of people with Byrds 3, which could be, in addition to any of the above factors, due to the fact that people from all parts of the country may once by touching the mass or to visit our center, which is the country's cancer center; However, due to the fact that the cost of commuting and residence and time off from daily work is high for patients, they refer to centers in their city for further follow-up. Patients may not want to follow up after being told that the lesions are benign, and this low percentage may be due to the inaccurate system of filing and archiving information in our center. In general, it is suggested to improve the information filing and archiving system in the Cancer Institute in order to have more accurate information and consequently more accurate planning. Regarding the shape of lesions, the frequency of asymmetry among our patients is higher than in other countries. Overall, it was not proven that the characteristics of the lesion seen in mammography and the involved side are predictors of malignancy; Although) microcalcification points were predictive of benignity); But all the malignant lesions in our study were located in the left breast. It is possible that some of these relationships will become significant in future studies if the final sample size is higher. In general, considering the low percentage of people who adhered to the follow-up and the high rate of malignancy and the good prognosis of the disease in case of early diagnosis, it is suggested to lower

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the rate of BIRADS 3 reports in mammograms and to determine the assignment of suspicious lesions as early as possible.

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