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Case Report

The Role of Mammography in Early Detection of Breast Cancer: A Case Collection Report

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Abstract

Background : Breast cancer is still the main cause of death in women, both globally and nationally. Therefore, mammography screening needs to be carried at to detect breast cancer early.
Cases Presentation : This paper presents the mammography findings of the 83 patients at dr. Ario Wirawan Pulmonary Hospital, Salatiga, Indonesia. Mammography examination used projection cuts, namely craniocaudal (CC) and mediolateral oblique (MLO). The classification used for this case series is BI-RADS.
Discussion : The results showed that of the 83 patients examined with mammography, 2 patients showed BI-RADS 4, indicating breast cancer, and 9 patients showed BI-RADS 2, indicating benign tumors. This case series report is consistent with previous studies explaining that mammography is important for making an accurate diagnosis of breast cancer between benign and malignant calcifications.
Conclusion : Mammography has a role in the early detection of breast cancer. Mammography examination using CC and MLO projections is a standard procedure that aims to obtain high-quality breast images and provide accurate information for early diagnosis of breast cancer.

Keywords : *mammography; BI-RAD; breast cancer*

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INTRODUCTION

Breast cancer is the most common tumor that causes death in women. Breast cancer is cancer that originates from the glands, ducts, and tissue of the breast.[1] Based on data from Globocan (International Agency for Research on Cancer – IARC), breast cancer ranks first among all cancers in women.[2] During 2018 – 2022, 7,800,000 cases of breast tumors were reported globally, with 685,000 deaths worldwide.[3] American Cancer Society state that there were around 2,261,419 cases of breast cancer, with 684,996 women dying from it.[2] Meanwhile in the UK, 24,000 women are diagnosed with breast cancer every year, and 15,000 would perish. Until the age of 80 years, a woman's risk of developing breast cancer is 1 in 9.[4] Likewise with Japan, deaths from breast cancer have not decreased in the last 20 years, with the highest incidence in women in their 40s.[5] The Indonesian Ministry of Health released that in 2022 there will be 65,858 breast cancer cases or 16.6% of all diagnosed cancers.[6] Of all breast cancer cases alone, 70 percent of them are already at an advanced stage and treatment becomes more complicated, requires greater costs and the risk of death is higher.[7]

Rapid and accurate diagnosis of breast lesions, including differentiating between cancerous, non-cancerous, and suspicious cancer, plays an important role in breast cancer prognosis.[8] To detect breast cancer, medical imaging is still one of the most reliable tools.[9] Mammography screening with enhanced CT scans contributes to reducing the death rate from breast cancer.[10] The study conducted by Duffy *et al*[11] states that mammography screening significantly reduced the risk of death from breast cancer, and the rate of breast cancer at an advanced stage. Other studies also say that mammography screening has been proven significant in reducing morbidity and mortality from breast cancer, thus having a high survival rate.[12–14] However, scholars reporting the role of mammography in Indonesia is still rare.

Mammography screening as an early detection of breast cancer is also a superior service at dr. Ario Wirawan Pulmonary Hospital. Based on data, since it opened in 2021 to 2023, 83 patients have had mammography examinations. Therefore, this article aimed to reports the role of demographics in the early detection of breast cancer.

CASES PRESENTATIONS

Mammography screening at dr. Ario Wirawan Pulmonary Hospital, Salatiga, began in 2021, with 83 women registered for mammography examinations. The demographic description shows that most people are over 40 years old (see Table 1). Next, the patient comes to the radiology department for a mammography.

Mammography examination uses projection cuts, namely craniocaudal (CC) and mediolateral oblique

TABLE 1
Clinical Data

Fig.	Age	Complaint	Pathology Anatomy Result	Diagnosis	Therapy	Long Care
1	38 years 4 months	Lump in right breast	Medullary carcinoma of the right breast with luminar molecular subtype	BI-RAD 4 Right breast carcinoma	Surgery, Chemotherapy, Radiotherapy	2 days
2	56 years 11 months	Pain in the breast	Medullary Carcinoma of the Breast	BI-RAD 4 Breast carcinoma	Therapy, Surgery, Chemotherapy, Radiotherapy	2 days
3	48 years 4 months	Medical Check Up	Taking medication from an oncology surge	BI-RAD 2 Not operated on	Take medicine	0 days
4	50 years	Medical Check Up	–	BI-RAD 2 -	Refuse operation	–
5	41 years 3 months	Medical Check Up	Usual Ductal Hyperplasia (UDH)	BI-RAD 2 Mammae Sinistra Fibrocystic Cange USD	Operation	1 day
6	35 years 7 months	Feeling of discomfort	Spindle Cell Lipoma	BI-RAD 2 Lipoma	2 day operation	2 days
7	29 years 8 months	Lump in left breast	Cyst of the Left Breast	BI-RAD 2 Cysta Mammae Sinistra	Operation	1 day

TABLE 1. Continued

Fig.	Age	Complaint	Pathology Anatomy Result	Diagnosis	Therapy	Long Care
8	25 years 7 months	Medical Check Up	Fibroadenoma with florid usual ductal hyperplasia UDH, Woman with multiple left mammary tumors	BI-RAD 2 Multiple Fibroadenomas	Operation	2 days
9	33 years 2 months	Medical Check Up	–	BI-RAD 2 –	Refuse surgery, take medication	–
10	67 years 3 months	Medical Check Up	–	BI-RAD 2 –	Refuse operation	–
11	29 years 2 months	Lump in the breast	Single Fibroadenoma	BI-RAD 2 Fibroadenoma (FAM)	1 day operation	1 day

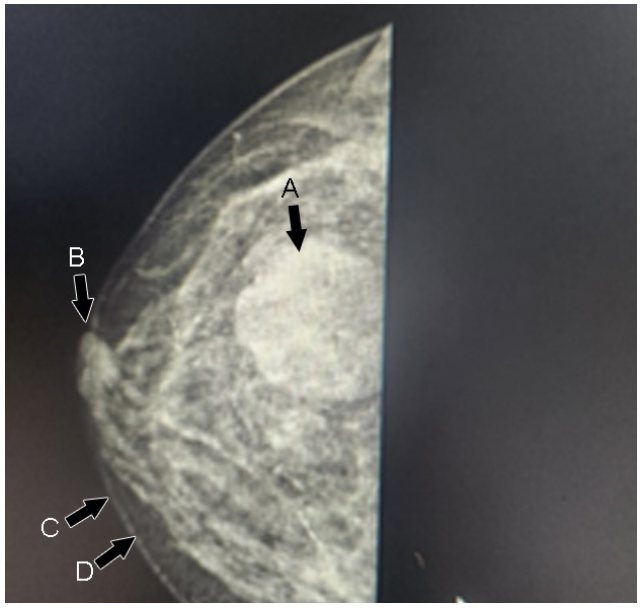

Figure 1. The first patient's mammogaphy with BI-RADS 4 category, found irregular-shaped mass in dextra mammae, partial margins of equal density in the lower outer quadrant (A), papilla mammae (B), cutis (C), and subcutis (D).

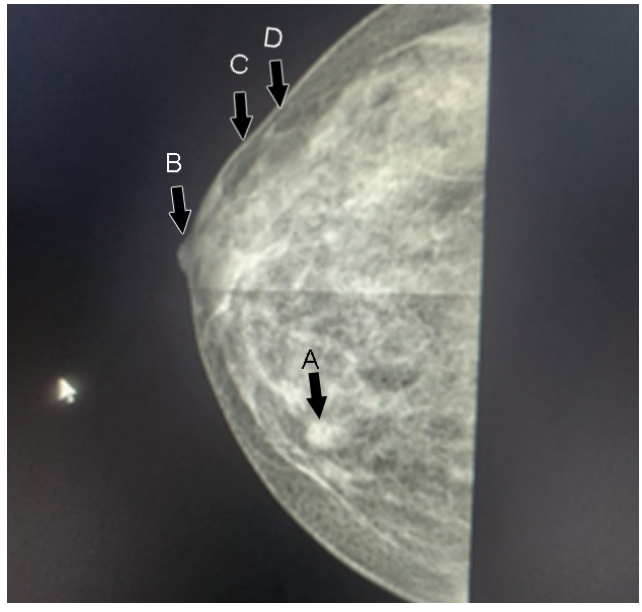

Figure 2. The eleventh patient's mammogaphy with BI-RADS 4 category, found an oval mass, circumscribed margins of equal density in the upper outer and inner quadrants, right mammary measuring 0.5 x 0.3 c. (A), papilla mammae (B), cutis mammae (C), and subcutis mammae (D).

(MLO). The mammography aircraft used is the Siemens brand with digital radiology mammography. The results of the mammography photos are then examined by radiology.

The classification used in the results of this case series mammography examination is Breast Imaging Reporting and Data System (BI-RADS). This system is used to assess findings on mammography and breast ultrasound examinations. BI-RAD consists of6 classifications, namely BI-RADS 1 is no abnormalities found in the breast. BI-RADS 2 is benign changes found that are not cause for concern. BI-RADS 3 is changes found that are most likely benign, but require further examination. BI-RADS 4 is changes suspected of being malignant (cancerous) were found. BI-RADS 5 is changes found that strongly suspect malignancy (cancer). BI-RADS 6 is found cancer which has been confirmed by histopathological examination (examination of tissue under a microscope).

RESULTS

Of the total, 1 patient with breast cancer was less than 40 years old. Two patients with multiple abnormalities

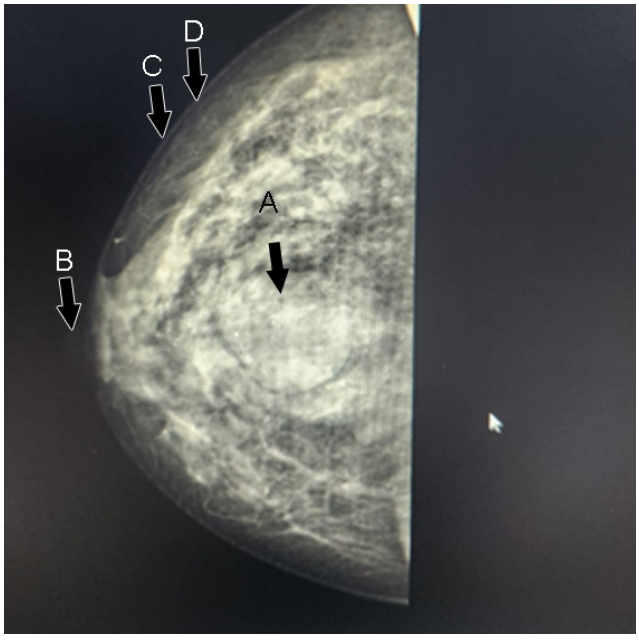

Figure 3. The second patient's mammogaphy with BI-RADS 2 category, found solid mass of relatively oval shape (A), pappila mammae (B), cutis (C), and subcutis (D).

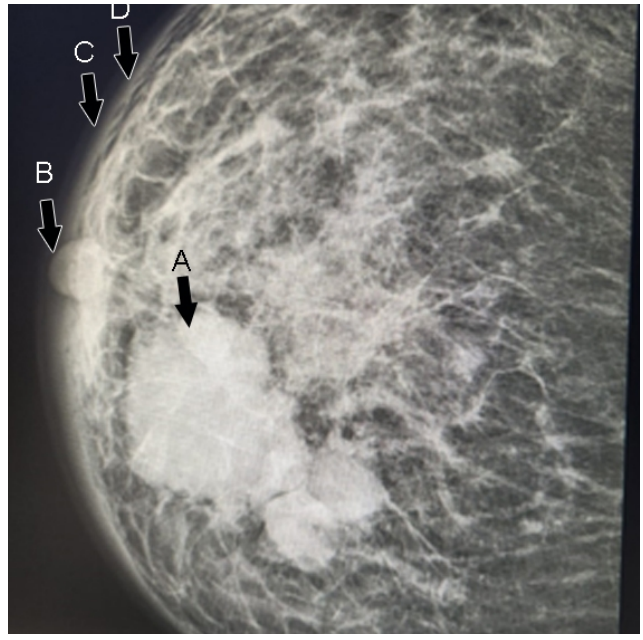

Figure 4. The third patient's mammogaphy with Birads 2 category, found mass with a relatively oval shape and well-defined boundaries (A), pappila mammae (B), cutis (C), and subcutis (D).

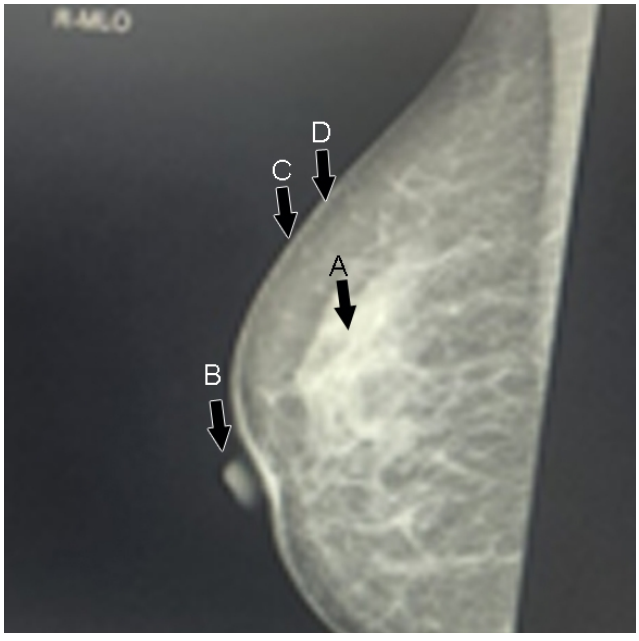

Figure 5. The fourth patient's mammogaphy with BI-RADS 2 category, found mass in the left mammary, firm boundaries, relatively oval shape, and flat edges (A), pappila mammae (B), cutis (C), and subcutis (D).

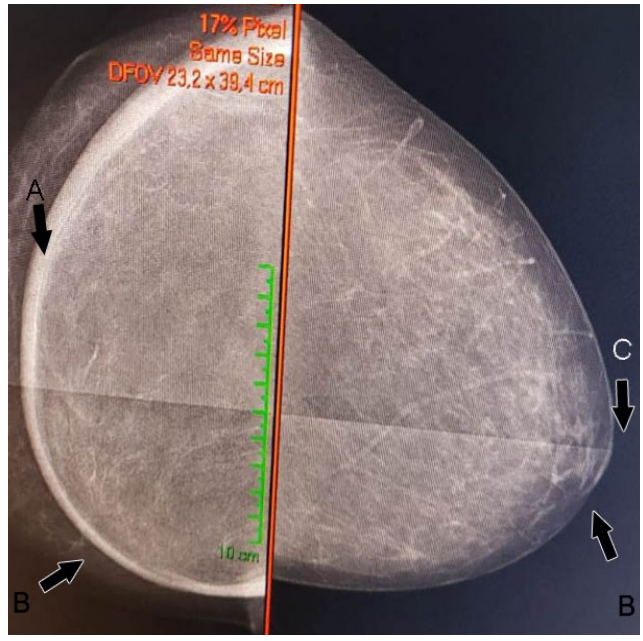

Figure 6. The fifth patient's mammogaphy with BI-RADS 2 category, found the mass has firm borders, round oval, circumscribed edges on the right mammae, no visible architectural distortion, no visible microcalcifications, lymphoma spindle (A), cutis and sub cutis (B), areola mammae (C).

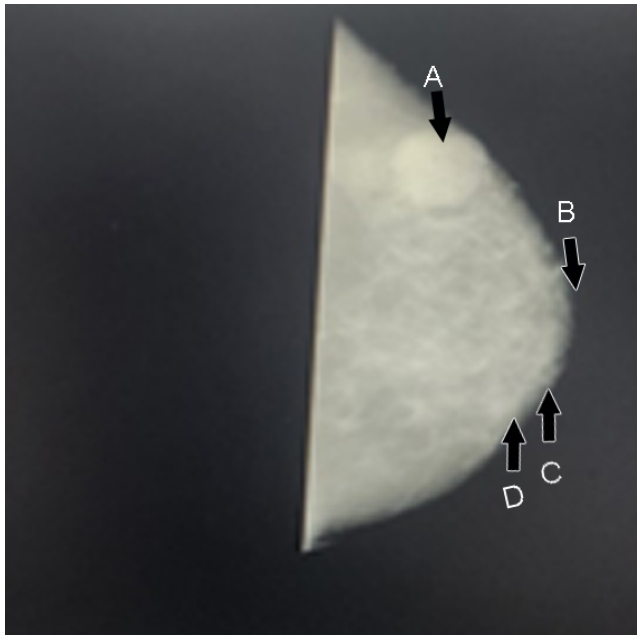

Figure 7. The fifth third patient's mammogaphy with BI-RADS 2 category, found relative mass oval shape, flat edges in the upper-outer left mammary region measuring 3.3 x 3.3 cm (A), areola mammae (B), cutis (C), and subcutis (D).

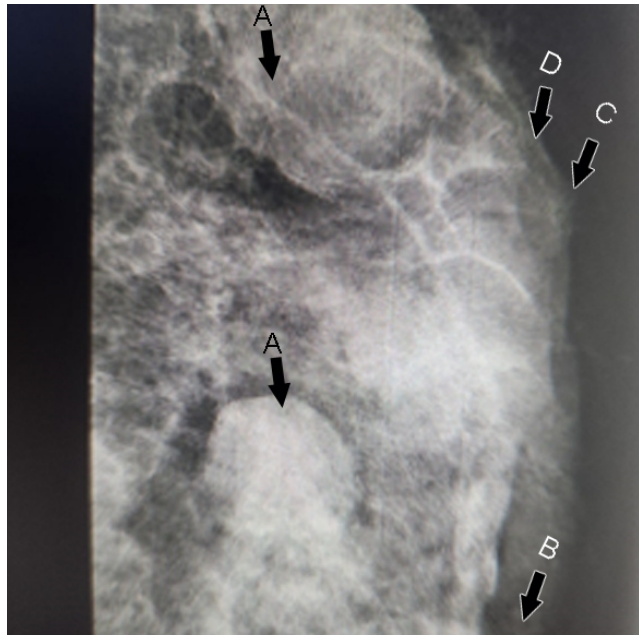

Figure 8. The seventh patient's mammogaphy with BI-RADS 2 category, found multiple masses in the left mammary, relatively oval shape, flat edges, size 2. 9 X 3.1 and 1.7 X 1.6 cm, no visible microcalcification lesions, no visible macrocalcification lesions (A), papilla mammae (B), cutis mammae (C), and subcutis mammae (D).

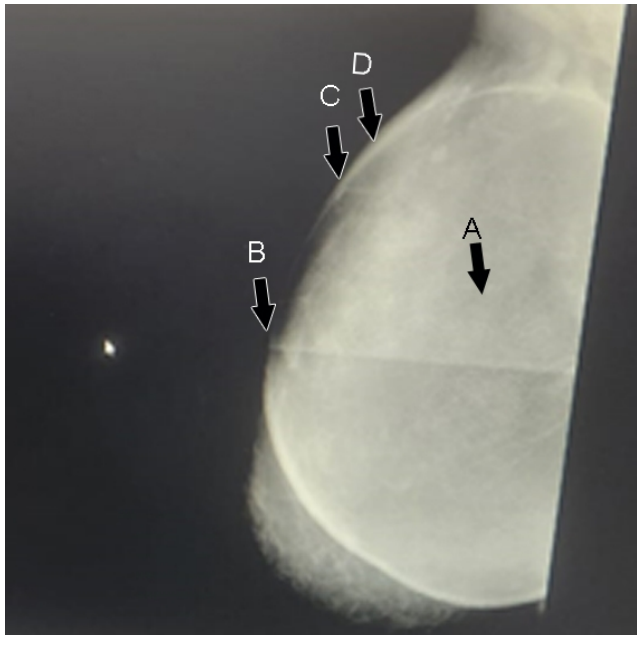

Figure 9. The eighth patient's mammogaphy with BI-RADS 2 category, found mass in the left mammary gland, round shape, flat edges, firm boundaries, no visible microcalcification lesions, no visible macrocalcification lesions (A), papilla mammae (B), cutis mammae (C), and subcutis mammae (D).

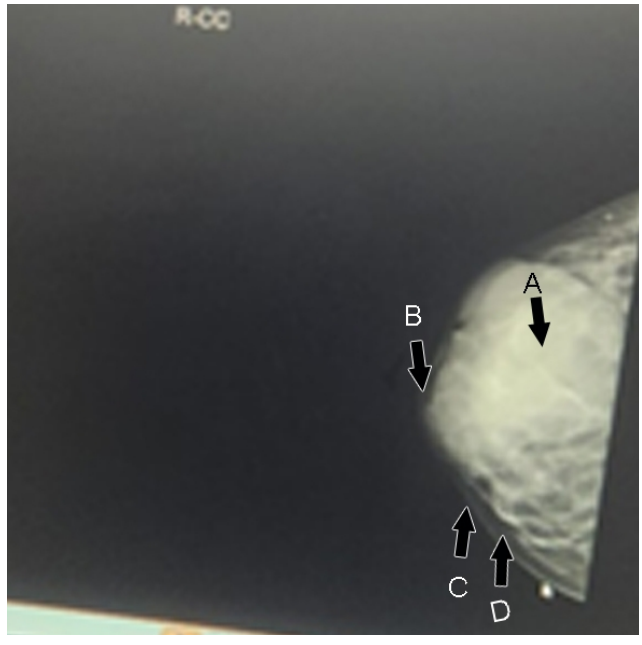

Figure 10. The ninth patient's mammogaphy with BI-RADS 2 category, found solid mass, lump in the right mammae, firm boundaries, relatively oval, in the right mammae, no visible microcalcification lesions, no visible macrocalcifications (A), papilla mammae (B), cutis mammae (C), and subcutis mammae (D)

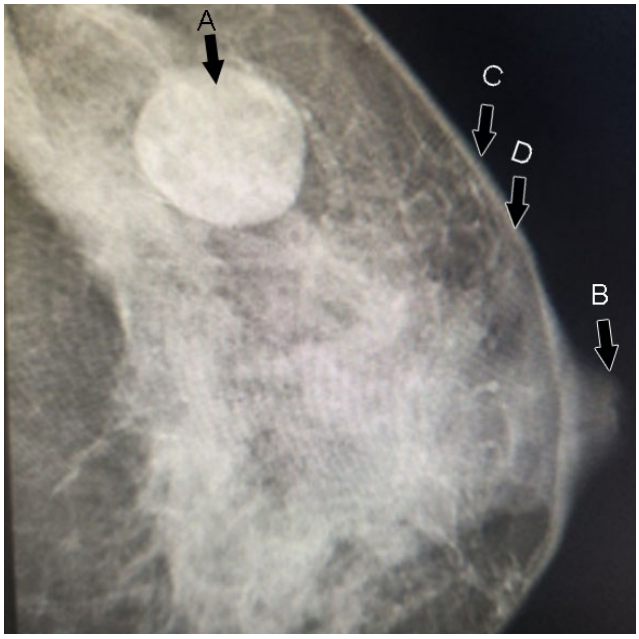

Figure 11. The tenth patient's mammogaphy with BI-RADS 2 category, found The cutis and subcutis are not thickened, the mammary papilla does not appear retracted, there is no visible calcified lesion, there is no visible enlargement of the lymph nodes in the left axilla, the opaq lesion appears round oval with flat edges in the upper-outer region, left mammary measures 1.5 X 1.6 cm, No visible macro or microcalcification lesions, No visible lymphadenopathy in the left axillary region (A), papilla mammae (B), cutis mammae (C), and subcutis mammae (D).

were found in the left and right breasts, aged over 40 years. One patient aged 36 years with malignant cancer, with a history of hereditary. To confirm this, the patient undergoes a biopsy.

Based on mammography examinations, of the 83, it was discovered that two patients was diagnosed with carcinoma malignancy breast cancer (Figure 1 and 2), nine women were diagnosed with benigma tumors (Figure 3 to 11).

DISCUSSION

The role of mammography is very important in women over 40 years. Mammography itself is a breast imaging examination that is often used to detect lumps or changes in breast tissue. In this case report series, mammography examination is carried out by taking several pictures of the breast from various angles to get more complete information. The two most common positions Cranio Caudal (CC) and Mediolateral Oblique (MLO).

The image produced from the CC projection provides information about the thickness of the breast tissue and its internal structure. The MLO projection provides a better view of the breast tissue located at the back and outside of the breast, including the tail of the breast. This projection is intended to view breast tissue from various angles. This helps in detecting lumps, calcifications (calcium buildup), or other tissue changes that may be difficult to see on a single projection. Apart from that, doctors can also obtain more accurate information about the size, shape, and location of the lesion.

Mammography results can be categorized with BI-RAD. For the Birad 2 category it is considered benign so it is sufficient to leave it, while Birad 3 is declared suspended, and Birad 4–5 is categorized as malignant. Therapy given to malignant breast cancer patients includes surgery, chemotherapy, and radiation.

The results of mammography examinations for 9 patients showed that BI-RADS 2 indicated benign tumors. This indicates benign results or no indication of cancer. BI-RADS 1 means negative results or no suspicious findings, while BI-RADS 2 means completely benign findings or no need to worry. The findings of this case are consistent with previous studies which revealed that BI-RADS can be utilized as a quality assessment tool in breast cancer screening.[14–16] Furthermore, this study supports the statement of several studies that mammography is an important criterion for doctors to make an accurate diagnosis of breast cancer into benign and malignant calcifications.[17–21]

Another finding from this case series was the subsequent mammography results explained that 2 (two) patients showed BI-RADS 4 which means breast cancer in women aged 38 years and 56 years. This category indicates the possibility of cancer. BI-RADS 4 shows findings that are suspicious of the possibility of cancer, so it usually requires a biopsy for further diagnosis. BI-RADS 5 shows very suspicious findings and is almost certainly cancer, so further medical attention is needed. This finding is in line with previous studies that breast cancer cases have increased in women under 40 years.[14, 22, 23]

CONCLUSION

Based on the description of the results and discussion, it can be concluded that mammography has a role in the early detection of breast cancer. Mammography examination using CC and MLO projections is a standard procedure that aims to obtain high-quality breast images and provide accurate information for early diagnosis of breast cancer or other medical conditions. Based on the case series, it can be concluded that the role of mammography is very important in finding abnormalities in the mammary glands. The role of mammography is very important in finding abnormalities in the mammary glands. Apart from

detecting tumors or mammary cancer, it can also detect abnormalities in the lymph nodes in the armpit.

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