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Evaluation of patients attending breast clinic in Alyarmook teaching hospital concerning ultrasound, mammography & cytological results during 2021

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Abstract

Introduction: Breast-related diseases, including breast cancer, have become a significant focus of attention due to their prevalence and impact on women's health. Breast cancer, in particular, is a leading cause of cancer-related deaths among women, affecting approximately 2.1 million individuals annually, according to the World Health Organization. The study's goals were to evaluate the clinical and imaging results of breast exams and to describe the radiological aspects in a particular healthcare context.

Method: A cross-sectional research was carried out, in which the sociodemographic data, imaging reports (mammography and ultrasonography with BI-RADS scores and characteristics), and clinical information of 2642 patients who attended Alyarmook Teaching Hospital between January 2021 and December 2021 were reviewed.

Results: The study included patients who presented with breast masses, and their age distribution revealed that 34.52% were below 40 years old, while 65.48% were over 40 years old. The majority of patients (77.9%) had a negative family history of breast cancer, while only 22.1% had a positive family history. Breast screening through imaging techniques, such as mammography and ultrasonography, played a crucial role in the early detection of breast cancer. The study also documented the findings of fine-needle aspiration (FNA) and true cut biopsies, highlighting the cases with high BI-RADS scores (4 and 5) and the percentage of masses that were malignant tumours.

Conclusion: Breast screening with imaging techniques was identified as the primary approach for the early detection of breast cancer in the studied population. The results emphasized the importance of regular breast examinations and highlighted the characteristics of different breast conditions based on radiological features.

Keywords: Breast cancer, mammography, ultrasound, cytology, evaluation

Introductions

Breast diseases have been a significant global concern, and medical imaging plays a crucial role in winning the battle against them. By revealing hidden lesions, breast imaging assists physicians in providing accurate diagnoses and appropriate treatments [1]. Breast self-examination (BSE) is the most well-known form of breast examination among the many methods available. Breast self-examination (BSE) is an individual's method of scrutinising their breast tissues for any palpable or visible changes, functioning as a method for early detection of breast cancer and tumours [2]. BSE was developed over 67 years ago based on an idea proposed by a chapter of the American Cancer Society and has become a recommended practice by healthcare professionals [3]. It has been particularly valuable for individuals who cannot access clinical breast examinations (CBE) performed by clinicians, due to economic or other reasons [4, 5]. Breast imaging, which includes techniques such as ultrasonography, mammography, and magnetic resonance imaging (MRI), is a subspecialty of diagnostic radiology [6, 7]. The American College of Radiology has introduced the Breast Imaging Reporting and Data System (BI-RADS) to standardize reporting and facilitate patient follow-ups. When creating a mammogram report, radiologists assign a single-digit BI-RADS score ranging from 0 to 5 [8]. Studies have shown that in Ghana, nearly 70% of women diagnosed with breast cancer were in advanced stages of the disease, leading to limited treatment success and high mortality rates (15.2 per 100,000) due to low awareness [9, 10].

However, educational programs on early breast cancer detection have been found to have a positive impact on the target population, as highlighted by a study conducted by Brakohiapa *et al.* [11, 12]. These programs encourage frequent breast imaging and check-ups throughout the year, emphasizing the importance of continuous vigilance rather than restricting awareness efforts to October, which is recognized as Breast Cancer Awareness Month. Therefore, the aim of this study is to evaluate patients in the breast clinic at Alyarmook Teaching Hospital during 2021, focusing on the early detection of cancer. The purpose of this study is to ascertain the clinical and imaging findings of breast examinations, documenting the most prevalent radiological characteristics in our particular setting. This investigation will contribute to the battle against breast-related maladies in Africa, which have a relatively high mortality rate.

Method

A total of 2642 case files were reviewed, encompassing patients who sought consultation at Alyarmook Teaching Hospital between January 2021 and December 2021. The data collected from the breast clinic records were meticulously organized, coded, and subjected to analysis. Out of the total cases, 24.5% (672 patients) specifically requested screening services, while the remaining individuals consulted for breast masses. The data management and statistical analysis involved exploring the effects of independent variables on breast cancer. These variables were age, clinical indication for breast imaging, familial history of breast cancer, duration of symptoms, BI-

RADS scores, and lesions identified within each BI-RADS score category. Statistical Package for Social Sciences (SPSS) version 20.0 was employed for data analysis, employing arithmetic mean, standard deviation, number, and percentage calculations. The results were appropriately presented using tables and charts. To examine potential associations among the categorized variables, a chi-squared test was utilized. The statistical significance level for this study was set at $p \leq 0.05$.

Results

There were only female participants in this investigation. This investigation included 2642 patients who presented with a mass during 2021 and underwent breast imaging (mammography and complementary ultrasonography) for BI-RADS classification. As depicted in figure (1), 912 patients had a body mass index (BMI) of less than 40 years, while 1,730 patients had a BMI of greater than 40 years. All patient information is displayed in tables and charts. As shown in figure (2), 13 (22.1%) of the reviewed patients had a positive family history of breast cancer, while 46 (77.9%) had a negative family history of breast cancer. Table (1) show the number of patients who were screened during 2021 (672) (25.43%) and that they (not screened) with results of ultrasound and mammography BIRAD were 1490 (56.40%). The BI-RADS distribution for this study for patients who they presented with (F.N.A) and (True cut) is shown in (Table 2). There is 8.7% of cases with breast cancer < 40 years from patients with mass during 2021 (Table 3).

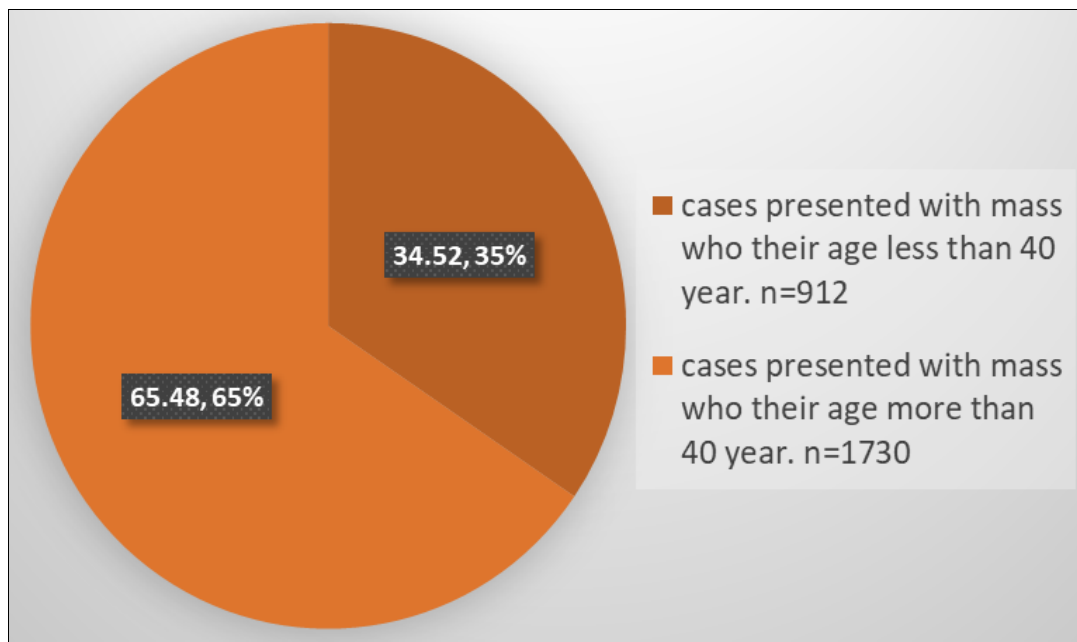


Fig 1: Cases who presented with mass, in Alyarmook Teaching Hospital according to their ages who they less than 40 year and more 40 year. N = (2642)

Table 1: Category of patients who were screening and without screening. Total n= (2642)

Parameters	January / 2021 – December / 2021	
	N	%
Screened Pts. in 2021	672	25.43
Pts. screened with results of U/S, Mammography BIRAD [1, 2, 3]	348	51.78
Pts who screened with results of U/S, Mammography BIRAD [4, 5]	13	1.93
symptomatic Pts.(with mass)	1490	56.40

U/S = Ultrasound, BIRAD = (Breast Imaging Reporting and Data System), n= number of sample. Pts = patients

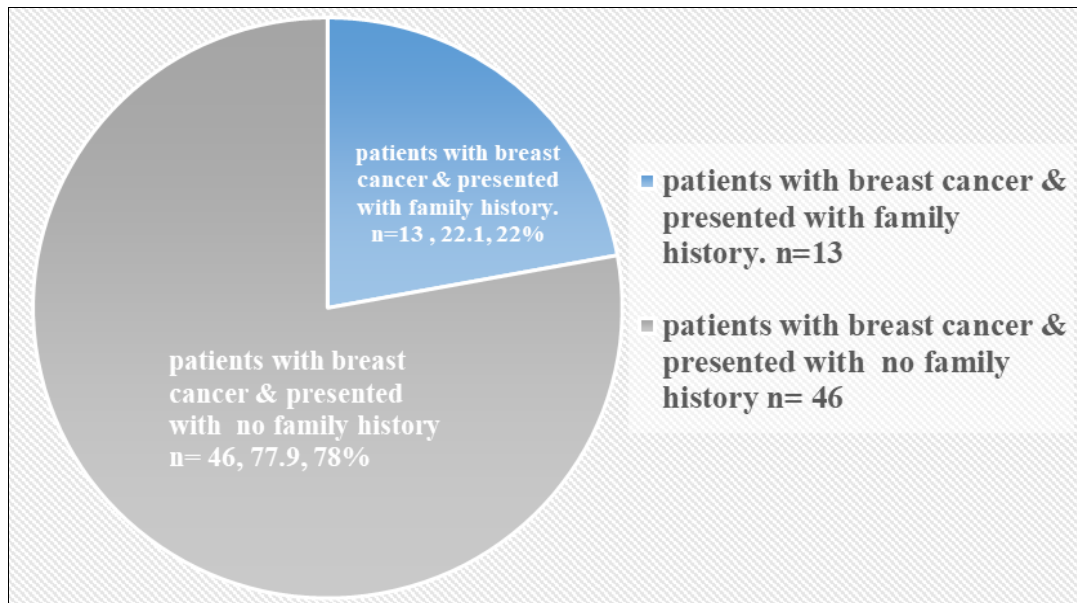


Fig 2: Patients diagnosed as Breast Cancer with family history and without family history n =59

Table 2: Total No. of patients with F.N.A and True cut results & their characteristics in 2021 (n=494 / total of sample 2642)

Parameters	January / 2021- December / 2021	
	N	%
Pts. BI RAD [4, 5]	452	91.5
Pts. with (mass) and BI RAD [4, 5]	349	13.21
Pts. with benign F.N.A & True-cut results	167	33.8
Pts. with malignant F.N.A & True-cut results	103	20.8

U/S = Ultrasound, BI RAD = (Breast Imaging Reporting and Data System), n= number of sample. Pts = patients, F.N.A= Fine needle aspiration

Table 3: Total No. of patients presented with mass and cancer related with age range between < 40 year and > 40 year during 2021

Age range	Patients who were their results mass		Patients who were their results cancer	
	N	%	N	%
Patients who were their age ≤ 40 Year.	912	34.5	8	8.7
Patients who were their age > 40 Year.	1730	65.5	49	2.8

Discussion

The majority of patients (65.48%, n=1730) who presented with breast masses were above 40 years of age (Fig 1). This corresponds to the recommended age group for breast cancer screening [13], indicating that healthcare practitioners are adhering to guidelines by requesting breast imaging for this age group. While family history is widely recognized as a significant risk factor for breast cancer [14, 15], our study found that the majority (77.9%, n=46) of patients with confirmed breast cancer, based on radiological and histological evidence, had no family history of the disease (Fig 2). The World Health Organisation (WHO) and other published articles have reported findings comparable to these. The World Health Organisation reported in March 2021 that the majority of breast cancer patients have no known family history of the disease [16]. In their study, Liu *et al.* discovered that only 10 to 15% of breast cancer cases

are associated with a family history, whereas 85 percent have no familial association [17]. Similar findings have also been documented by other studies [18, 24]. This may be attributed to oral contraceptive use, cigarette smoking, and menopause as additional contributing factors [20]. Table 1 demonstrates that out of the participating patients in 2021, who had breast masses and underwent screening, 672 (25.43%) were included. Among them, 348 (51.78%) had benign findings (BI-RADS 1, 2, 3) indicating breast masses. The number of patients with the same findings but with BI-RADS 4 or 5 was 13 (1.93%). This could be attributed to the fact that making accurate decisions based on BI-RADS classification (1, 2, 3) is easier compared to the other group classified as BI-RADS 4 or 5. This is because ultrasound and mammography are less accurate in differentiating malignant tumours from benign tumours due to the density of breast tissue in cases of malignancy. This finding is consistent with a study [21] where only benign imaging findings (n = 63) were observed in 55 out of 209 patients who underwent breast imaging for routine screening. The number of benign findings may be higher than malignant findings, as indicated in Table 2. Additionally, the difference in age groups can influence the accuracy of mammogram results. In 2021, the breast clinic case files documented a total of 59 cancer patients out of the total number of malignant results (103) [22, 23]. This suggests that not all patients provide feedback or enter documented information and follow-up programs.

Conclusion

The percentage of cases presenting with breast masses and the proportion of malignant tumours were higher in the age group above 40 years compared to the age group below 40 years. Additionally, a significant number of cases had ultrasound and mammographic BI-RADS results but were not screened. Therefore, it is recommended to implement more comprehensive measures and expand the scope of research. It is important to acknowledge that there may be cases that were not included in the study due to factors such as the COVID-19 crisis, which could have impacted data collection and analysis.

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