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Sonographic Features of Breast Cancer among Sudanese Women

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Abstract : *The main objective of this study was to determine the characteristic of different breast cancers in ultrasound images.*
This study was done on 32 patients who have breast cancer in different ages (20-60 years) and it was done on radiation and isotopes center in Khartoum.
The important results of this study were most common age group who has breast cancer was from 40 to 49 years (59,6%) also the most common type of breast cancer was invasive ductal carcinoma (84,4%) follows by lobular carcinoma (9,4%) and malignant phylloid tumor (6,3%).
Keywords: *breast carcinoma, U/S, ductal carcinoma.*

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I. Introduction

Ultrasound is an essential breast imaging tool. It was the base investigation to distinguish cysts from solid masses. However, with major advances in ultrasound technology ultrasound, it can be distinguished between benign and malignant solid lesions. Must common advantage to Ultrasound is to evaluate masses seen on mammography and diagnostic imaging modalities eg: magnetic resonance imaging (MRI). Clinical breast symptoms such as palpable masses, focal pain, and suspicious nipple discharge are most commonly requested for ultrasonography. Moreover, ultrasound is the imaging modality of choice for guided biopsies for breast cancer. Knowledge of the specific benign and malignant ultrasound characteristics of breast masses is imperative for accurate diagnosis and optimal patient management. [1]

Breast cancer is among the most common causes of cancer deaths today, the studies reported that one in every 100 deaths worldwide and almost one in every 15 cancer deaths were due to breast cancer. Now a day's most common using 7.5–13 MHz probes, that with high frequency added new facet in breast imaging.[2] because when using high-frequency probes provide better lateral resolution.

As a result these probes lead to a positive predictive value in visualization of breast cancer because these types of probe had good soft-tissue contrast resolution and low near-field artifacts. [3, 4, 5]

Now a day ultrasound become great effect in detecting small breast lesion than mammography is the relative difference in the density and acoustic impedance of the lesion.[5,6]

II. Materials And Methods

2.1Material

2.1.1Area and duration

This study was done on radiation and isotopes center in Khartoum from April 2016 –May 2016.

2.1.2 Sample study

32 patient's ages range from 20-60 years, all of them female under breast ultrasound, with different symptoms which are pain, breast masses, and nipple discharge.

Inclusion criteria: patient with breast cancer in female and patient age between 20-60 years.

Exclusion criteria: patient with enlarging lymph nodes and patients less than 20 years and over 60 years.

2.1.3 Machine used

Real-time ultrasound machine PHILIPS model HDI-CS-220 and a linear probe with 7MHwas the tool examination.

2-2 Methods

2-2-1 Sonographic technique

Examination patient in supine and supine oblige with ipsilateral arm on the examined side lifted on the head so as to spread the breast, the breast is covered with a coupling agent to a allow transmission of the ultrasound beam and easy movement of the transducer a allow transmission of the ultrasound beam and easy

movement of the transducer, transducer is orientations set up so that the breast is viewed in section from nipple out word, and scanning was performed in a clockwise manner, covering all anatomy including the axillary regions. [7,8]

Most real-time ultrasound imaging is performed with 7, 5 to 10 MHz probe with supine patient position and pillow behind the shoulder and arm extended overhead. sonographic transmission gel is applied on the examined area. The entire breast and axilla should be imaged, usually in a radial pattern outward from the nipple. Gel is obtained between the transducer and the skin to reduce air artifact, and slight compression of the transducer improves image quality. [8]

Lesions may also be viewed in several planes but should be characterized in at least two orthogonal planes, many interventions are done on the breast and the axilla can be performed under ultrasonographic guidance, including FNA, core-needle biopsy, and wire localization. Intraoperative ultrasonographic can also assist in the identification and removal of no palpable masses and can reduce the miss rate with needle-localized excisional breast biopsy, ultrasonography can also be used to guide biopsy of clinically suspicious axillary lymph nodes to better identify patients who are likely to benefit from neoadjuvant therapy. [8,9]

2.2.2 Image interpretation

ultrasonography is particularly useful for differentiating cystic from solid breast lesions. Mainly a simple cyst tends to be oval or lobulated and anechoic with will define borders. Solid masses are characterized sonographically concerning shape, compressibility, high width ratio, margins, internal echo pattern, and presence of shadowing versus posterior enhancement. Carcinomas are typically hypoechoic masses that are taller than they are wide, with irregular borders and broad an acoustic shadowing. As with mammography, however, some malignancies cannot be visualized with ultrasonography, and thus all clinically suspicious breast masses under biopsy.

2.2.3 Statistical analyses

All data obtained in the study were documented and analyzed using SPSS program version16. Descriptive statistics, including frequency and percentages, were calculated. ANOVA test was applied to test the significance of differences, *a p*-value of less than 0.005 was considered to be statistically significant.

III. Results

All collected data analyzed and tabulated in tables and graphs as follows:

Table 1: Shows the age distribution

Age group	frequency	Percentage
20-29	6	18,7%
30-39	5	15,6%
40-49	19	59,4%
50-60	2	6,3%

Table 2: Shows the type of cancer distribution

Type of cancer	Frequency	Percent
Invasive ductal carcinoma	27	84,4%
Lobular carcinoma	3	9,4%
Malignant phylloid tumor	2	6,3%

Table 3: Shows echogenecity Invasive ductal carcinoma distribution

Echogenecity	frequency	Percent
Hypo	16	50%
Hyper	6	18,8%
Heterogeneous	5	15,6%
Total	27	84,4%

Table 4: Shows echogenecity lobular carcinoma distribution

Echogenecity	Frequency	Percent
Hypo	1	3,1%
Hyper	1	3,1%
Heterogeneous	1	3,1%
Total	3	9,3%

Table 5: Shows echogenecity phylloid tumor distribution

Echogenecity	Frequency	Percent
Hypo	0	0%
Hyper	0	0%
Heterogeneous	2	6,2%
Total	2	6,2%

Table 6: Shows outline features and types of breast cancer

type of carcinoma	smooth	irregular	frequency	percent
invasive ductal carcinoma	5	22	27	84.40%
lobular carcinoma	2	1	3	9.30%
phylloid tumor	0	2	2	6.30%
Total	7	25	32	100.00%

IV. Discussion

The data in this study was collected on radiation and isotopes center in Khartoum, this study was taken to assess characteristics of breast cancer in the ultrasound image.

Most of the patients (78.1%) in this series of the examination were pre menopausal in the age group 30-50 years old, (18.8%) below the age of 30 years and (3,1%) above the age 50 years old who mainly was taking hormone.

In this series majority of type of cancer is invasive ductal carcinoma (84.4%) lobular carcinoma (9.4%) and phylloid tumor (6.3%).

In this series, most invasive ductal carcinoma is demonstrating hypoechoic lesion (50%) with irregular outline (68%). Lobular carcinoma is demonstrating hypoechoic (3.1%) hyperechoic (3.1%) and heterogynous lesion (3.1%) with a smooth outline (6.3%). Phylloid tumors are demonstrating heterogeneous lesion (6,2%) with irregular out line (6,2%).

By comparing this result with Tarja Rissanen the final diagnosis was benign in 47 cases (90%) and malignant in5 cases (10%). Sonography visualized an echogenic intraductal tumor in 36 (69%) of 52 cases, dilated duct(s) without an intraductal tumor in 6 cases (12%), and no abnormal in 10 cases (19%). Eighty percent of papillomatous lesions, 58% of other benign lesions, and 20% of the malignant lesion were sonographically positive. The abnormal duct was surgically removed after methylene blue staining in 38 cases, after sonographically guided wire localization in 11 cases, after both wire localization and methylene blue staining in 1 case, and with the review of the diagnostic galactographic images in 2 cases. [10,11]

Jose L. Del Cura **(9)** color flow was more frequently seen in malignant (237/348 lesion (68%) than in benign (171/478, 36%) lesion ($p<0.001$) .however sensitive, specificity and positive and negative predictive value for this sign were low (68% 64% 58% and 73%, respectively). [12]. The RI and PI values were significantly higher ($P<0.001$) in cancer .although an overlap in these values between benign and malignant lesion was observed, all but one nodule with a RI of greater than 0.99 (those with the null or inverted diastolic flow) or PI of greater than 4 were malignant. No significant relationship was found between PI, RI, or flow visualization on power Doppler sonography and tumor grade or lymph node involvement in cancer. [12-14]

V. Conclusion

The main objective of this study is to evaluate the characteristic of breast cancer using ultrasound. Ultrasound is relatively inexpensive and uses no ionizing radiation, unfortunately, breast sonography is operator-dependent and requires a high level of skill and expertise.

Ultrasound is an important and very sensitive imaging technology for demonstrating a different type of breast cancer and locate the site of the lesion.

Ultrasonography can differentiate between a solid mass and cystic mass. Masses with mammography findings that are suspicious or highly suggestive of malignancy, or masses with suspicious or typically benign calcifications, don't require an ultrasound for assessment, though ultrasound can be used to guide needle biopsy if the mass is seen sonographically.

References

[1]. Ultrasound characterization of breast masses, World Health Organization (February 2006) Fact sheet No 297: Cancer.
[2]. Catarazzi S, Guispetti GM, Rissato G, Roselli Del Turo M. Studio Multicentrico per la valutazione della efficacia diagnostics della mammografia e della ecografia nelle neoplasie mammarie non palpabili. Radiol Med. 1992;84:193. [PubMed] [Google Scholar]
[3]. Meritt CRB. Technology Update. Radiol Clin North Am. 2001;39:385–97. [PubMed] [Google Scholar]
[4]. Shapiro RS, Wagreich J, Parsons RB, et al. Tissue Harmonic Imaging Sonography, evaluation of image quality compared with conventional sonography. AJR. 1998;171:1203–6. [PubMed] [Google Scholar]
[5]. Zhi H, Ou B, Luo BM, Feng X, Wen YL, Yang HY. Comparison of Ultrasound Elastography, Mammography, and Sonography in the Diagnosis of Solid Breast Lesions. J Ultrasound Med. 2007;26:807–15. [PubMed] [Google Scholar]

[6]. Galukande M, Kiguli-Malwadde E. Rethinking breast cancer screening strategies in resource-limited Settings. Afr Health Sci. 2010;10(1):89–92.
[7]. Crystal P, Strano SD, Shcharynski S, Koretz MJ. Using Sonography to Screen Women with Mammographically Dense Breasts. AJR Am J Roentgenol. 2003;181:177–82. [PubMed] [Google Scholar]
[8]. Buist DSM, Porter PL, Lehman C, Taplin SH, White E. Factors contributing to mammography failure in women aged 40–49 years. J Natl Cancer Inst. 2004;96:1432–1440. doi: 10.1093/jnci/djh269
[9]. Katrina N.glazebrook, 2007, carcinoma of the breast mimicking and areola dermal lesion, 26:1083-lo87.
[10]. Mariep, E. N.(2006).Essentials of human anatomy and physiology. (8th Edition).San Francisco, CA: Pearson Benjamin Cummings
[11]. American College of Radiology BI-RADS . Breast imaging reporting and data system: BI-RADS atlas 4th ed. Reston, VA: American College of Rad; 2003. Ultrasound, 1st Ed. [Google Scholar]
[12]. American cancer society. (2009, Novemper9).breast cancer. Atlanta, GA: American Cancer Society. -2016 Canadian cancer society all rights reserved registered charity:118829803 RR 0001
[13]. Rissanen T[1], Reinikainen H, Apaja-Sarkkinen M. Breast sonography in localizing the cause of nipple discharge: comparison with galactography in 52 patients.J Ultrasound Med. 2007 Aug;26(8):1031-9.
[14]. Jose L. del Cura, Elena Elizagaray, Rosa Zabala Breast Imaging: The Use of Unenhanced Doppler Sonography in the Evaluation of Solid Breast Lesions June 2005, Volume 184, Number 6

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