Biostatistics Evaluation of Women Breast Lesions in Baghdad/Iraq

Noor F.M. Ali[1], Hiba A. Abdul Sattar[2], Mervet Abd-alhassan[3], Fathaa Abdullah Mahmoud[4], Munya H. Sabri[5]

[1]College of Pathological Analysis Technique/Al- Bayan University, Baghdad, Iraq, [2]College of Medical Lab Techniques/Osol Aldeen University College, Baghdad, Iraq, [3]College of Pathological Analysis Technique/Al-Bayan University, Baghdad, Iraq, [4]College of Pathological Analysis Technique/Al-Bayan University, Diyala, Iraq, [5]Al-Elwiyah Educational Hospital, Baghdad, Iraq

Abstract

Background: Breast lesions are a basic term for a benign or malignant tumor or bump in the breast. This study is aimed to evaluate the biostatistics range of the malignant lesions in women breast in Baghdad/Iraq and compared it with other types of breast lesions by using ultrasound in diagnoses.

Method: The study is done on 1494 of women patients from different ages and screened through six months in Al-Elwiya Educational Hospital in Baghdad/Iraq, by using ultrasound machine to diagnosis of the breast lesion type's and divided it into groups (normal, benign, suspected and malignant).

Conclusion: Our result showed **horizontally** significant differences (P≤0.01),(P≤0.05) in groups of (normal, Begnin, suspected) in percentages about (35.94%), (30.79%), (32.20%) respectively. Except of malignant group has no significant differences and percentage about (1.07%) throughall months. And **vertically** our result showed high significant differences (P≤0.01) between all the studied groups (normal, benign, suspected, and malignant) and percentages was (35.94%, 30.79%, 32.20%, and 1.07%) respectively. That means there is little case of malignant lesion significantly improved by ultrasound,because all the suspicious breast lesions detected by ultra-sound should be biopsied in histologic results to confirm or exclude the presence of malignancy.

Keywords: *Breast, lesion, tumor, benign, malignant, suspected, ultrasound.*

Introduction

The tumor (also known as a neoplasm) is an abnormal mass of tissue that may be solid or fluid-filled. In general, tumors are divided into three groups:[1,2]

- **Benign:** These are not cancerous, not harmful and cannot spread. A benign tumor will remain in its current form. They do not generally return after being removed.
- **Premalignant:** A premalignant tumor is not yet cancerous but appears to be developing the properties of cancer. It's required close monitoring.
- **Malignant:** Malignant tumors are cancerous. They can grow quickly, spread, and can potentially result in death.

Breast tissue is heterogeneous, associating connective and glandular structures, which grow and change cyclically under hormonal regulation. Hormones are also thought to be the main determinant of the major benign and malignant pathologies encountered in the breast. Benign lesions are more frequent and fibrocystic changes are by far the most common among them. They usually associate different entities, (adenosis, fibrosis, cysts and hyperplasia) but vary in intensity and extension.

Corresponding Author:
Noor F.M. Ali
College of Pathological Analysis Technique/Al- Bayan University, Baghdad, Iraq
e-mail: noor_veterinarian@yahoo.com

Thus, their clinical and radiographic presentation is extremely different from one patient to another.[3]

Breast cancer is regarded as one of the most frequent mortality causes among women. As early detection of breast cancer increases the survival chance. Breast cancer symptoms vary widely — from lumps to swelling to skin changes—and many breast cancers have no obvious symptoms at all.[4, 5]

Ultrasound is safe, painless and widely used. It produces pictures of the inside of the body using sound waves. Ultrasound imaging is also called ultrasound scanning or sonography. Ultrasound exams are Noninvasive and does not use radiation (like X-rays) that helps physicians diagnose and treat many of medical conditions. The images are captured in real-time; so they can show the structure and movement of the body's internal organs. They can also show blood flowing through blood vessels. When an ultrasound examination reveals a suspicious breast abnormality, a physician may choose to perform an ultrasound-guided biopsy.[6]

Materials and Method

1494 of women patients from different ages were screened through six months (beginning from January/2019 till the end of June/2019) in Al-Elwiya Educational Hospital in Baghdad/Iraq, all were viewed by using ultrasound machine (MEDISON SONOACE 8000 Live prime) to diagnosis of the breast lesion type's and divided it into (normal, benign, suspected and malignant).

The ultrasound machine produces pictures of the internal structures of the breast by using sound waves. It uses a small probe called a transducer and gel placed directly on the skin of breast. High-frequency sound waves travel from the probe through the gel into the breast. The probe collects the sounds that bounce back. A computer uses those sound waves to create an image.

Ultrasound imaging can help to determine whether a new breast lump is a solid (which may be a non-cancerous tumor or a cancerous tumor), fluid-filled (such as a benign cyst) or both solid and cystic.[7]

High-quality images of the normal and abnormal breast can be obtained with modern ultrasound equipment. At the minimum, a 7.5 MHz linear array probe should be used, through digital broadband-width transducers using higher frequency (mid-range exceeding 7.5 MHz) are widely available and allow higher resolution imaging. The patient is examined in the supine oblique position. The side being examined is raised and the arm placed above the head to ensure that the breast tissue is evenly distributed over the chest wall. In addition to conventional orthogonal scanning direction, scanning in the radial and antiradial planes are of value in demonstrating ductal abnormalities. [8, 9]

Statistical Analysis: The Statistical Analysis Systemprogram was used to detect the effect of difference factors in study parameters. Chi-square test was used to significant compare between percentage (0.05 and 0.01 probability) in this study.[10]

Results and Discussion

Our results in **1494** patient screened will explained in two ways:

First: Horizontally: According to the table (1) the column of normal group has high significant differences ($P \leq 0.01$) in percentage about (35.94%) through all months, the highest percentage was in January (44.90%), the lowest percentage in June (26.91%).

The column of benign group has significant differences ($P \leq 0.05$) in percentage about (30.79%) through all months, the highest percentage was in January (37.24%), the lowest percentage in April (26.16%).

The column of suspected group has high significant differences ($P \leq 0.01$) in percentage about (32.20%) through all months, the highest percentage was in June (40.36%), the lowest percentage in January (17.86%).

The column of malignant group has no significant differences in percentage about **(1.07%)** through all months.

Second: Vertically: The table below showed high significant differences ($P \leq 0.01$) between all the studied groups (normal, benign, suspected, and malignant) was (35.94%, 30.79%, 32.20%, and 1.07%) respectively. The highest percentage was in normal cases (35.94%), but the lowest percentage was in malignant cases (1.07%). That means there is little case of malignant lesion diagnosed by ultrasound.

Table (1): Total Number of patients that are diagnosed in all the Six month (from January 2019 to June 2019) and classified to (normal, benign, malignant, and suspected)

Months	Total patients	Total No. of Normal	Total No. of Benign	Total No. of Suspected	Total No. of Malignant	Chi-Square (χ^2)
January	196(13.12%)	88(44.90%)	73(37.24%)	35(17.86%)	0(0.00%)	11.641**
February	281(18.81%)	112(39.86%)	95(33.81%)	70(24.91%)	4(1.42%)	9.836**
March	261(17.47%)	88(33.72%)	75(28.73%)	88(33.72%)	10(3.83%)	9.107**
April	279(18.67%)	93(33.33%)	73(26.16%)	112(40.14%)	1(0.36%)	12.632**
May	254(17.00%)	96(37.80%)	72(28.35%)	86(33.86%)	0(0.00%)	9.871**
June	223(14.94%)	60(26.91%)	72(32.29%)	90(40.36%)	1(0.45%)	10.523**
Chi-Square (χ^2)	2.194NS	6.702**	4.524*	9.331**	0.536NS	---
Total summary						
All Six months	1494	537(35.94%)	460(30.79%)	481(32.20%)	16(1.07%)	9.761**

*(P≤0.05), ** (P≤0.01)

Discussion

Horizontally, our results in all six months showed significant differences (P≤0.01 & P≤0.05)of normal, benign and suspected cases group except the malignant that showed no significant differences because of the Variable consequences depending on the applied techniques used, as well as their diagnostic measures. Additionally, thickness, lesion size, shape of breast that affected on ultrasound for differentiation of normal, benign, suspected and malignant breast lesions. And this finding is agreed with.[11]

Malignant lesions that are soft, like: mucinous carcinomas, necrotic tumors, and ductal carcinoma in situ, may be false diagnosed as benign, and benign conditions that are stiff, such as: scarring, fibrosis, and complex fibroadenomas, may be misjudged as malignant. And this result is fixed with[12,13 and 14].

Vertically, the results showed high significant differences (P≤0.01) between all the studied groups (normal, benign, suspected, and malignant). The highest percentage was in normal cases (35.94%), but the lowest percentage was in malignant cases (1.07%). That means there is little case of malignant lesion significantly improved by ultrasound, because all the suspicious breast lesions detected by U/S should be biopsied in histologic results to confirm or exclude the presence of malignancy. And all that is agreed with.[15]

Conclusion

At the end, our study of Biostatistics evaluation of women breast lesions in Baghdad/Iraq showed that breast thickness (lesion size, lesion depth, lesion location and pathologic finding)are factors influencing the image quality at ultrasound, with sensitivity for the classification of benign and malignant masses improving with higher quality scores. And all the suspicious breast lesions detected by ultrasound should be biopsied in histologic results to confirm or exclude the presence of malignancy.

Conflict of Interest: Nil

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Ethical Clearance: All the data collected was approved by doctors in Al-Elwiya Educational Hospital in Baghdad/Iraq. The patient name and personal data have not been collected.

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