

SONOGRAPHY SPECTRUM OF 200 SOLID BREAST NODULES - A CROSS SECTIONAL ANALYSIS

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ABSTRACT

INTRODUCTION

We evaluated the sonographic spectrum of breast nodules from a database of diagnostic USG.

METHODS

A total of 200 solid breast nodules in women who underwent sonography were included. The indications for breast sonography were nonspecific mammographic abnormality in 59(59%), palpable abnormality in 37(37%), follow-up of a sonographic lesion in 2(2%), nipple secretion with unsuccessful ductography in 1(1%), and other indications in 1(1%). All patients were examined with high frequency, 7.5-10.0-MHz probe of Philips HD7 XE equipment.

RESULTS

The mean age of the women was 57±8 years, with a range of 20-75 years. Out of them 50 were malignant, 110 were benign and remaining 40 were intermediate.

We studied a spectrum of breast nodules and based on USG findings we diagnosed them provisionally as malignant in (33.33%) of cases, (73.33%) benign and (26.66%) were intermediate lesions, caution has to be executed in analysing the study results.

CONCLUSION

Radiological imaging by USG should be applied as a first investigation of choice in suspected breast pathologies. However, additional clinical and histopathological information helps in narrowing the differential diagnosis.

KEYWORDS

Breast Nodules, Benign, Malignant, Ultrasonography.

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INTRODUCTION: Breast cancer is among the most common causes of cancer deaths today, coming fifth after lung, stomach, liver and colon cancers. It is the most common cause of cancer death in women.⁽¹⁾ Breast lesions are either cystic or solid in appearance and can be either malignant or benign. Ultrasound is excellent at imaging cysts: round, fluid-filled, pockets inside the breast. Additionally, ultrasound can often quickly determine if a suspicious area is in fact a cyst (always non-cancerous) or an increased density of solid tissue (dense mass) which may require a biopsy to determine if it is malignant (cancerous). Refinement of high-frequency technology, particularly with high frequency linear probes, has brought out a totally new facet in USG breast imaging.⁽²⁾ USG is useful in detecting small breast cancers that are not detected on mammography.⁽³⁾ It is very useful in grading malignancies due to its ability to pick contagious spread. The above information motivated us to evaluate the sonographic spectrum of breast nodules from a database of groundwork diagnostic USG.

METHODS: This study was conducted From March 2014 to July 2015. Institutional ethics approved study protocol. 200 solid breast nodules in women who underwent sonography were included. The mean age of the women was 57±8 years, with a range of 20-75 years. The indications for breast sonography were nonspecific mammographic abnormality in 59% and palpable abnormality in remaining 41%. All patients were examined with high frequency, 7.5-10.0-MHz probe. The maximum diameter of the nodule was measured and defined as the greatest dimension of the nodule in any plane. On sonography, benign lesions are well circumscribed, hyper echoic and are having smooth lobulations, whereas malignant characteristics includes spiculation lobulations, small lobulations, angular margins, markedly hypoechoic nodule, posterior shadowing, branching pattern, punctate calcifications and duct extension.^{(4,5) (6) (7)}

STATISTICAL ANALYSIS: Data was presented as mean standard deviation, actual numbers and percentages. Preliminary statistics was performed by using Microsoft Excel after data cleaning and data mining.

RESULTS: In our study a total of 200 breast nodules were evaluated using sonography. Out of them 50 were malignant, 110 were benign and remaining 40 were

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intermediate. In malignant lesions sonographic findings were in the order. Spiculation (24%)>Hypo echogenicity (22%)> Angular-margins (16%) > Calcification (10%)> Shadowing (8%)= Duct extension (8%)= Branch pattern (8%) > Microlobulation (4%). Whereas in benign lesions sonographic findings were Ellipsoid shape (29%) > Intense-hyper echogenicity (24%) > absent malignant findings

(20%) > Thin, echogenic pseudocapsule (15%) > Gentle bi- or trilobulations (13%). Intermediate lesions showed Isoechogenicity Marked (30%) > Maximum diameter (28%)> Mild hypo echogenicity (15%) > Normal sound transmission (13%) > Enhanced transmission (8%) > Heterogeneous texture (5%) > Homogeneous texture (3%). Findings can be appreciated from table-1.

Malignant	N	%	Benign	N	%	Intermediate	N
Spiculation	12	24	Absent malignant findings	22	20	Maximum diameter	11
Angular margins	8	16	Intense-hyper echogenicity	26	24	Isoechogenicity Marked	12
hypo echogenicity	11	22	Ellipsoid shape	32	29	Mild hypo echogenicity	6
Shadowing	4	8	Gentle bi- or trilobulations	14	13	Normal sound transmission	5
Calcification	5	10	Thin, echogenic pseudocapsule	16	15	Enhanced transmission	3
Duct extension	4	8				Heterogeneous texture	2
Branch pattern	4	8				Homogeneous texture	1
Microlobulation	2	4					
Total	50			110			40

Table 1: Spectrum of sonography findings in solid breast nodules

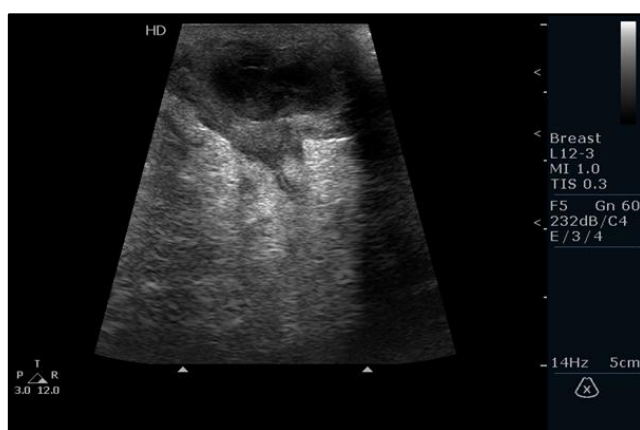


Figure 1



Figure 2

DISCUSSION: It is also evident from the literature that ultrasound is advantageous in patients with dense breasts for the detection of non-palpable and mammographically occult lesions. We collected ultra sound findings from our data base and analysed the patterns of findings and came to know that malignant lesions were less than benign. The main limitations of this study include non-availability to either histopathological data or clinical data for correlation. However, the frequencies of appearance of various

ultrasound findings were presented in a concise way. About half of these solid masses are usually classified as indeterminate and will eventually undergo a biopsy, However data was not available. The possible benign lesions include fibrocysts, fibroadenoma and lipomas. It is also possible that medullary, mucinous or papillary carcinoma can mimic benign lesions.^(7,8) Although it may be impossible to distinguish all benign from all malignant solid breast nodules using USG criteria, it can classify these lesions as benign, allowing imaging follow-up rather than biopsy. Studies that used both USG and mammography, have demonstrated a near 100% negative predictive value for palpable breast lesions.⁽⁷⁾⁽⁸⁾ Kwak et al. observed similar predictivity with both fine-needle aspiration cytology and USG in breast tumours⁽⁹⁾ Heinig et al. also found USG characterization of breast lesions using BIRADS-US criteria is highly accurate in classification of breast lumps.⁽¹⁰⁾

CONCLUSION: E studied a spectrum of breast nodules using USG database and found that (33.33%) were malignant, (73.33%) benign and (26.66%) were intermediate lesions. An improved cancer detection and differentiation can be expected with high-resolution ultrasound. It should be applied as a first investigation of choice in suspected breast pathologies. However, additional clinical and histopathological information helps in narrowing the differential diagnosis.

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