



EVALUATION OF FLOW CHARACTERIZATION OF BREAST LESIONS ON COLOUR DOPPLER SONOGRAPHY

Medical Science

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KEYWORDS

- Objective of the study:** To evaluate breast lesions using ultrasonography and classify them using Ultrasound BI-RADS categorization based on shape and margins
- To evaluate sensitivity, specificity, Positive Predictive Value, Negative Predictive Value and Accuracy of Sonography in differentiating Malignant from benign lesions
- To correlate ultrasound features of breast lesions with FNAC / histopathology

Materials and Methods: Source of data:

Hospital attached to Father Mullers Medical college, Mangalore Department of Radiology

Methods of collecting data:

Duration of the study: October 2015 to September 2017

Sample size: 50 cases.

Inclusion criteria:

All patients with clinically palpable breast lesions or with suspicious lesions on mammography above 18 years of age. Follow up of tissue diagnosis done during the duration of my study in this hospital

Exclusion criteria:

All patients with inflammatory breast lesions on sonomammography. Patients whose sonological examination is inadequate or tissue diagnosis not available and those lost for follow up

Procedure - Patients were selected according to the inclusion criteria. Informed written consent and Ethical clearance was taken from the institute. A thorough clinical history was taken followed by physical examination for each patient. Ultrasonography of the breast was done in Philips IU-22 equipment, using a high frequency (12MHz) linear probe. Finally Core biopsy / FNAC of the lesion was done and the report assessment was done.

Table 10

Flow Characterisation of Index Lesion on Colour Doppler Sonography (n=50)

Detection of Vascularisation	Frequency in All Masses	Frequency in Benign Masses	Frequency in Malignant Masses
Present	28/50(56.0%)	8/28 (28.6%)	20/22 (90.1%)
Absent	22/50(44.0%)	20/28 (71.4%)	2/22 (9.01%)

Pattern of vascularisation on Index Lesion on Colour Doppler Sonography

(n=28)

Pattern of Vascularisation	Frequency in All Masses	Frequency in Benign Masses	Frequency in Malignant Masses
Penetrating	15/28 (53.6%)	1/8 (12.5%)	14/20 (70%)
central	5/28 (17.8%)	1/8 (12.5%)	4/20 (20%)
Peripheral	8/28 (28.6%)	6/8 (75%)	2/20 (10%)

Table1

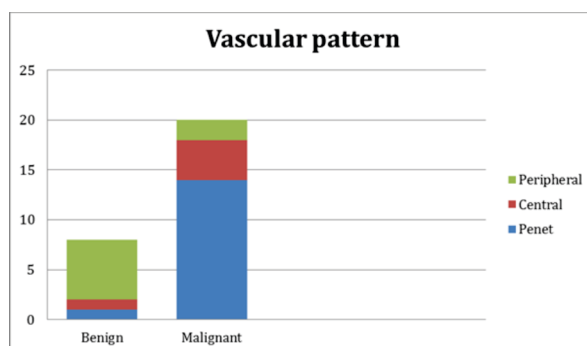


Figure1

Flow Characterisation of Index Lesion on Colour Duplex Sonography (n=50)

Resistive Index Value	Frequency in All Masses	Frequency in Benign Masses	Frequency in Malignant Masses
>0.99	19/28 (67.8 %)	1/8 (12.5%)	18/20 (90%)
<0.99	9/28 (32.1%)	7/8 (87.5%)	2/20 (10%)

Table 3

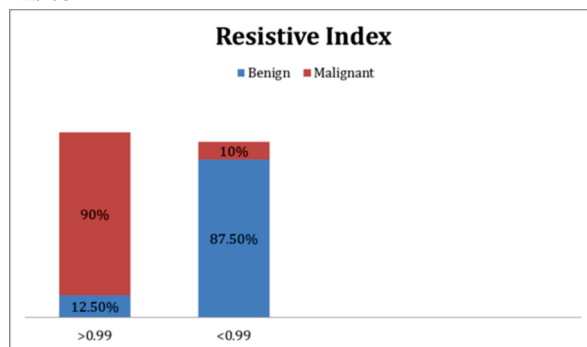


Figure 2

DISCUSSION

Doppler US has been used successfully to detect malignant tumour neovascularisation of the female breast since 1977.^[1] Colour Doppler sonography seems to be diagnostically useful in lesion, indicates higher possibility of malignancy but is not useful as the main sign of malignancy.^[2]

However, any lesion with a vessel that has an RI (Resistive Index) value greater than 0.99 or a PI (Pulsatility Index) value greater than 4 within it must be considered as probably malignant regardless of any other sonography sign present. Most of the malignant lesions were having RI value greater than 0.99. RI value was greater than 0.99 in 90% of malignant lesions. RI value was less than 0.99 in 87.5% of benign lesions and 10% of malignant lesions. One of the eight benign lesion showing RI value greater than 0.99 was an intra-ductal

papilloma. The disappearance or reversal of vascular flow in diastole, appears to be closely connected to malignancy in the lesion.

Del Cura et al ^[3] reported that 97% of tumours in which this sign appears were carcinomas and the remaining lesion correspond to radial scar. This sign gives high positive predictive value.

They reported that detection of RI equal to or greater than one as a sign of malignancy presented a specificity of 97% and positive predictive value of 97%, both very high, but it was observed in small number of cases. In the present study, 20/22 (90.1%) malignant lesions and 8 of 28 (28.6%) of benign lesions showed vascularisation. RI value was greater than 0.99 in 90% of malignant and 12.5% of benign. Most common pattern of vascularisation was penetrating. Penetrating vascular pattern was seen in 70% of malignant and 12.5% of benign lesions. Central vascular pattern was seen in 12.5% of benign lesions. Peripheral vascular pattern was seen in 10% of malignant and 75% of benign lesions.

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