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Original Research Article

To compare the sensitivity and specificity of the traditional triple assessment of symptomatic breast lesions with contrast-enhanced dynamic magnetic resonance imaging.

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Abstract:
Background & Method: The aim of this study is to compare the sensitivity and specificity of the traditional triple assessment of symptomatic breast lesions with contrast-enhanced dynamic magnetic resonance imaging. patients with palpable breast lesions were recruited from the symptomatic breast clinics. All underwent clinical examination by consultant breast surgeons, FNAC was performed according to our standard protocol for symptomatic patients, which does not include image guidance.

Result: MRI proved to most sensitive and specific modality. Triple assessment MRI and FNAC all have specificity of 100%. MRI proved to be most sensitive modality with 96 % sensitivity, (physical examination 91%, USG 91%, FNAC 84% and Triple assessment 84 %.)

Conclusion: With the aim of improving the accuracy of triple assessment, MRI can provide valuable information and with improvements in technology can further enhance specificity. Contrast-enhanced dynamic magnetic resonance imaging of the breast is as sensitive and more specific than the combined traditional triple assessment for the diagnosis of malignant breast lesions.

Keywords: sensitivity, specificity, breast, lesions & MRI.

Study Designed: Observational Study.

1. INTRODUCTION

Breast cancer is one of the most important diseases for women worldwide and constitutes one fourth of all cancers in females, making it the most common cancer in females .Breast cancer is 100 times less common in men.

Breast cancer accounts for approximately 15% of female cancer deaths. It is the leading cause of death in women aged 44-50 years[1]. The incidence of breast cancer (number of new breast cancers per 100,000 women) increased during the 1980s but leveled off in the 1990s and declined between 2001 and 2003. Worldwide, the incidence of breast cancer is highest in developed countries in North America and Western Europe, with lowest incidences seen in South America, Africa and parts of Asia[2].

The 5-year breast cancer survival rate ranges from 98% for stage I cancer to approximately 16% for stage IV cancer. Death rates from breast cancer have steadily declined since the early 1990s, with the largest decreases among younger women[3].

Breast cancer evaluation should be approached with an ordered inquiry beginning with symptoms and general clinical history, followed by clinical examination and, finally, investigation, which may include imaging and biopsy[4].

This approach naturally lends itself to a gradually increasing degree of invasiveness, so that when a diagnosis is obtained, the process can be stopped with the minimum amount of invasion and, consequently, minimum discomfort to the patient. Because the more invasive investigations also tend to be the most expensive, this approach is usually the most economical[5].

2. MATERIAL & METHOD

Present study was conducted at Hind Institute of Medical Sciences, Safedabad for 01 Year, patients with palpable breast lesions were recruited from the symptomatic breast clinics. All underwent clinical examination by consultant breast surgeons, FNAC was performed according to our standard protocol for symptomatic patients, which does not include image guidance.

The results of the clinical examination were graded as P1, normal; P2, benign; P3, probably benign; P4, probably malignant; and P5, malignant. A classification of P4/5 was taken as positive for the diagnosis of malignancy.

Ultrasound was performed by specialist breast radiologists. DCE-MRI of the breast was then arranged. The resulting films were classified as no abnormality, benign, indeterminate/suspicious, or malignant. The classification of suspicious or malignant was taken as positive.

3. RESULTS

Table No. 01

	Specificity	**sensitivity**
Physical examination	91.4%	91%
USG	95%	91%

115 patients with a mean age of 44 years (range 15 to 78 years) were recruited. Out of 115 patients 100 with clear evidence of malignancy were excluded from study and rest 15 were subjected to MRI. Specificity of USG and physical examination is 95% and 91.4% respectively.

Table No. 02

	Specificity	**sensitivity**
FNAC	100%	84%
MRI	100%	**96%**
TRIPLE ASSESSMENT	100%	84%

MRI proved to most sensitive and specific modality. Triple assessment MRI and FNAC all have specificity of 100%. MRI proved to be most sensitive modality with 96 % sensitivity, (physical examination 91%, USG 91%, FNAC 84% and Triple assessment 84 %.)

4. DISCUSSION

Dynamic contrast-enhanced MRI relies on fundamentally different methods of image acquisition and processing than x-ray mammography. Mammography relies on tissue density; contrast-enhanced MRI is dependent on tumor vascularity and permeability. This gives it a theoretical advantage to identify breast lesions and to distinguish benign from malignant disease. Dimeglumine gadopentetate (Gd-DTPA), the contrast agent most commonly used, was first applied to breast imaging in the 1980s. However, in these early scans it was found that although excellent sensitivity was obtained, the specificity was poor because both benign and malignant lesions enhanced on postcontrast images[6].

In an attempt to improve the specificity of the breast MRI, fast scanning sequences were introduced to facilitate dynamic imaging of breast tissue. With this technique, the actual uptake curve of the Gd-DTPA can be analyzed, improving the differentiation of benign from malignant tissue—malignant tissue enhances rapidly and heterogeneously, and benign tissue enhances more slowly and homogeneously. Of course, these techniques represent a more advanced level of MRI technology and some centers still use pre- and postcontrast images, accepting the associated reduction in specificity[7].

The patient undergoing MRI of the breast does not suffer the discomfort associated with the compression plates used in traditional mammography. There is no associated problem with radiation exposure, and in general MRI is as well tolerated as other comparable methods of x-ray imaging, such as computed tomography[8]. However, there is a significant cost disadvantage: breast MRI is approximately 10 times more expensive than a traditional mammogram.

5. CONCLUSION

With the aim of improving the accuracy of triple assessment, MRI can provide valuable information and with improvements in technology can further enhance specificity. Contrast-enhanced dynamic magnetic resonance imaging of the breast is as sensitive and more specific than the combined traditional triple assessment for the diagnosis of malignant breast lesions.

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