

The Triple Assessment Method”: Unveiling the Secrets of Breast Carcinoma Diagnosis

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Abstract

Triple assessment is an approach used in the diagnosis and management of breast cancer. It involves three components that help us comprehensively evaluate breast abnormalities like lumps, mass, etc. The three components of triple assessment include clinical assessment, radiological imaging, and Histo-pathological analysis.

Thus, by combining the information obtained from clinical assessment, radiological imaging, and Histo-pathological analysis, healthcare professionals can determine the type of breast cancer and plan appropriate management modalities. This approach helps improve diagnostic accuracy, and this combination's Positive predictive value (PPV) should exceed 99 per cent[1].

Keywords: breast carcinoma diagnosis; positive predictive value; breast cancer

Main Body

For any patients who present with a breast mass (lump) or any other complaint of breast suspicion of carcinoma, the diagnosis should be made with a combination of clinical assessment, radiological imaging and Histo-pathological analysis of the tissue sample.

Let's explore each component of triple assessment.

Clinical examination of the breast includes a thorough examination of the breast either done by the healthcare professional or by the patient itself. Clinical examination reveals any lump or mass present in the breast or changes in the size of the breast or any significant skin changes like dimpling or peau d' orange, nipple discharge, nipple position and retraction[2]. Clinical examination can be done in three ways, the Dial clock method or vertical strike or horizontal strike method. Out of this dial the clock method is considered the best practice where the examination is done circularly moving from inner to outer.[3] It is advised to examine the normal breast first followed by the affected breast. A detailed history is also taken to evaluate any associated symptoms or risk factors.

Radiological imaging includes imaging techniques that give detailed visualization of the breast tissue. The most done imaging techniques are Mammography, Ultrasound Sonography and Magnetic imaging resonance (MRI).[4]

Mammography uses X-rays to detect abnormal areas, such as microcalcifications, macrocalcification or masses, within the breast. There are two views taken, Cranio-Caudal (CC) view and Mediolateral Oblique (MLO) view, in later one more breast tissue is visualized along

with the axilla. Mammography is advised as a diagnostic test after 40 years of age. It is considered the best screening method for detecting any carcinoma in the breast.[5] Annual screening is advised after 40 years of age[6] but in high-risk people with strong family history, BRCA mutation or first-degree relatives of patients with BRCA mutation, it is advised to start screening from 30-35 years of age.

Ultrasound Sonography uses sound waves to produce images of breast tissue and can help differentiate between solid masses and fluid-filled cysts[7]. USG is the imaging modality of choice in pregnant ladies with a lump and in young females with dense breasts[8]. On USG any intracapsular breast implant rupture is seen as a Stepladder pattern whereas extracapsular rupture is seen as a Snowstorm appearance[9].

In some cases, additional imaging techniques like magnetic resonance imaging (MRI) may be used for further evaluation. Indications of MRI include patients with Breast Implants, where any intracapsular rupture of the implant can be detected (Linguini Sign)[9]. MRI is the most sensitive investigation for Ductal carcinoma In-situ (DCIS)[10] and helps to differentiate between multifocal and multicentric lesions.

A standardised way of reporting Mammograms, USG, and MRIs is BIRADS Score. Breast Imaging Recording and data system (BIRADS) were developed by the American College of Radiology (ACR) to provide a uniform method for reporting mammography and breast imaging findings. The BIRADS system uses a scale of categories ranging from 0 to 6[11], each indicating a specific level of suspicion or recommendation for further evaluation.

- 0: Incomplete assessment or need for additional imaging evaluation
- 1: Negative or normal finding
- 2: Benign finding
- 3: Probably benign finding (follow-up recommended every 6 months)
- 4: Suspicious abnormality (biopsy recommended)
- 5: Highly suggestive of malignancy (biopsy strongly recommended)
- 6: Known biopsy-proven malignancy (treatment already underway).

The BIRADS assessment is provided by a radiologist after reviewing the imaging results. It helps to standardize reporting across different healthcare facilities, referring physicians, and patients regarding the level of suspicion for breast abnormalities detected on imaging.

Histo-Pathological assessment involves the analysis of breast tissue samples by a pathologist who specializes in analysing cellular and tissue abnormalities. The pathologist evaluates the tissue for the presence of cancer cells, determines the type of breast cancer, and assesses its characteristics, such as grade and hormone receptor status. A breast tissue sample can either be taken as a biopsy or by Fine needle aspiration. Fine Needle aspiration cytology (FNAC) is a cytological analysis of a sample which is taken by a 23-30G needle[12]. For superficial lesions, FNNAC (Fine needle non-aspiration cytology) is done.

The biopsy includes either an excisional biopsy in which the entire lump is removed surgically or an Incisional biopsy, where a chunk or part is only removed.

TRU-CUT biopsy is an incisional biopsy method which is an Investigation of choice[13] because it helps to differentiate between In-situ and invasive cancer and ER, PR, HER and NEU status can be obtained with fewer false negative results. 8-18G needle is used whereas 16G needle is best for breast biopsy. However, the Gold standard technique for breast lump is Excisional Biopsy.[14]

By combining the information obtained from clinical assessment, radiological imaging, and Histo-pathological assessment, healthcare professionals can determine the likelihood of breast cancer and plan appropriate management strategies. The triple assessment approach helps improve diagnostic accuracy and ensures that patients receive the most appropriate and timely care for their breast health.

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