Evaluation of Breast Diseases by Triple Test, With Advantages of Ultrasonogram over Mammogram

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I. Introduction

Aim & Objectives
\begin{itemize}
  \item To assess the effectiveness of Triple test (TT) in evaluation of breast diseases.
  \item To compare TT (as a combined diagnostic modality) to each of its components.
  \item To find whether addition of ultrasound to TT provide any benefit to diagnosis.
\end{itemize}

Need For the Study
\begin{itemize}
  \item Breast lump is the clinical presentation of numerous breast diseases ranging from innocent benign cysts to malignant lesions.
  \item Distinction of benign from malignant is of paramount importance for proper management.
  \item Breast cancer accounts for 33% of all female cancers and is responsible for 20% of the cancer related deaths in women.
\end{itemize}

Methods
\begin{itemize}
  \item Patients attending RMMCH outpatient department with breast related complaints from 1st March 2013 to 1st July 2014 were assessed.
  \item Each patient was subjected to clinical examination, mammography, Ultrasound, FNAC, and HPE and the results analyzed.
\end{itemize}

Method of Collection of Data
\begin{itemize}
  \item Sample size: 100 patients
  \item Sampling method: Simple random sampling
\end{itemize}

Inclusion Criteria: Females between 15 and 80 Yrs Presenting With
\begin{itemize}
  \item Palpable breast lumps
  \item Breast related complaints
\end{itemize}

Exclusion Criteria: Patients With
\begin{itemize}
  \item Lump associated with fungation
  \item Open biopsy and HPE performed prior to presentation to our hospital
  \item Patients who did not continue treatment / lost follow up / underwent non-surgical treatment (chemotherapy/ radiotherapy).
\end{itemize}

Investigations
\begin{itemize}
  \item Mammography of both breasts
  \item Ultrasound of both breasts
  \item FNAC of breast lesion, direct or image guided
  \item Histopathological examination
\end{itemize}

Mammography and Ultrasound was done for patients before FNAC. The results were analyzed and categorized according to BIRADS score.

Mammography
\begin{itemize}
  \item Conventional mammography delivers a radiation dose of 0.1 centigray (cGy) per study. By comparison, a chest x-ray delivers 25% of this dose.
  \item However, there is no increased breast cancer risk associated with the radiation dose delivered.
\end{itemize}
With screening mammography.

- With screening mammography, two views of the breast are obtained, the crano-caudal (CC) view and the medio-lateral oblique (MLO) view.
- The MLO view images the greatest volume of breast tissue, including the upper outer quadrant and the axillary tail of Spence.
- The CC view provides better visualization of the medial aspect of the breast and permits greater breast compression.
- The compression device minimizes motion artifact, improves definition.
- Magnification techniques (x1.5) are used to better resolve calcifications and the margins of masses.
- Mammographic signs can be described in terms of:
  - Opacity (mass)
  - Architectural distortion
  - Calcification
  - Radiolucency
  - Asymmetry (Diffuse or focal)
  - Skin thickening and retraction
  - Edema and trabecular thickening
  - Asymmetrically dilated ducts

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DOI: 10.9790/0853-1504104754  www.iosrjournals.org  38 | Page
Ultrasonogram

- The primary use of Ultrasonography is to distinguish between solid and cystic breast lesions.
- This includes non-palpable lesions detected with mammography as well as vaguely palpable lesions.
- In pregnant women, to avoid radiation exposure and the tendency to have increased breast density, ultrasound is the modality of choice for evaluating masses.
- Even palpable masses may not be visible on radiography in a dense breast.
Well defined radio opaque density with coarse calcifications noted in inner quadrant of right breast parenchyma.

**Ultrasonogram – Fibroadenoma**
(Well defined hypoechoic mass with smooth margin)
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**Mammogram**
ill-defined opacity noted in mammogram

**Ultrasonogram - Breast abscess**
Hypoechoic with internal septations, and diffuse oedematous breast

**Ultrasonogram – carcinoma**
Poorly differentiated adenocarcinoma with spiculated margins and diffuse hyper echoic perifocal infiltration

**FNAC**
- Needles - 23/22 gauge needle is recommended for the breast
- Plastic Syringes - 5-10ml.
- The sample is expelled onto a slide. Aspirate can be ‘dry’ (numerous cells in small amounts of tissue fluids) or ‘wet’ (small number of cells suspended in fluid or blood).

II. Results
Summary

- Clinical diagnosis of breast cancer is of higher sensitivity than specificity and has high diagnostic error.
- Mammography and FNAC respectively have lower sensitivity than specificity but have high positive predictive values.
- When combined in the triple assessment, a definitive diagnosis can be made when the diagnoses concur, suggesting that the triple assessment has a high sensitivity, specificity, positive predictive value and negative predictive value.
- 100 patients were included in the study, with age ranging from 15yrs to 80yrs. Benign diseases (67.74%) were more common than malignant (32.26%), of which fibroadenoma constituted 23% of cases.

III. Conclusion

- Triple test is a very useful tool in evaluating the breast diseases.
- Adding USG to the Triple test did not add up to the negative predictive value of Triple Test.
- USG may be used instead of mammogram to avoid the radiation due to mammogram, young females & for denser breast.

Bibliography