RESEARCH ARTICLE

COMPARATIVE STUDY BETWEEN BREAST SELF EXAMINATION AND TRIPLE EXAMINATION (MAMMOGRAM, ULTRASOUND AND FINE NEEDLE ASPIRATION)

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ABSTRACT

Background: Breast self examination (BSE) is non invasive technique that women are able to practice to monitor any changes in their breasts. Breast cancer is one of the leading cause of cancer deaths in women worldwide so the early diagnosis & management of breast lesions is therefore important to reduce mortality .Objective of the study to assess the validity of breast self examination in detection of breast disease. **Patients and method:** The study was conducted in Breast Center, Radiology Department and Pathology Department in AL-Zahrawi Teaching Hospital over period between October 2005 to August 2006 in Mosul City. 113 selective patients presented with breast mass by self examination referred to combined examination (mammogram and sonogram) and the finding were compared with fine needle aspiration cytology. **Result:** 113 patients were examined by combined examination and histopathology biopsy showed 32 patients (28.31%)from total were normal, 68 patients (60.17%) were benign masses, the commonest benign tumor 26 patients (23.00%) were fibro adenomas, 5 patients (4.42%) were fibro/adenosis, 14 patients (12.38%) were breast abscess, 7 patients (6.19%) were breast cyst, 1 patient (0.88%) was lipoma, 15 patients (13.27%) were duct actasia and 13 patients (11.50%) were ductal carcinoma. **Conclusion:** Breast self examination is valuable in early detection of breast masses in addition to combined examination and fine needle aspiration and 66 patients (58.40%)of self examination was positive in triple test, periodic breast self examination is advisable to improve the mortality rate from breast cancer.

INTRODUCTION

Breast self examination (BSE) is non invasive technique that women are able to practice to monitor any changes in their breasts. Symptoms women presented with included breast pain or tenderness, lump, discharge from nipple or combination of these symptoms which may contribute to early detection of breast cancer (Erskine and Crowe, 1998). The best approach to management of patient with palpable mass is combination of physical examination, radiographic image and pathology (Biopsy and fine needle aspiration) called triple test (Morris *et al*., 2002; Vetto *et al*., 2003; Oswald Graf *et al*., 2004). Anatomically Breast consists of 15-20 lobes, each lobe consists of variable number of lobule of 10-100 acini, each lobe is a collection of glandular tissue drain by duct which constitute the parenchyma, the fatty and fibrotic tissue constitute the stroma all contain within sac formed by Pectoralis fascia. Coopers ligament are tent like projection of the superficial layer of the superficial fascia through subcutaneous tissue to skin. The number of lobule per each lobe varies according to age, parity and other individual factor (Ronald and Grainger, 1997). Primary reason for performing mammogram in women with palpable mass is to screen the

Ipsi-lateral and contra-lateral breast for occult cancer (Linda Moy *et al*., 2002). The normal mammographic appearance depends on amount of fat and glandular tissue. In young women breast contain a large glandular tissue appear as soft tissue density, in older women most of breast of fatty density. The junction between the subcutaneous and retro mammary fat layer and the glandular tissue consist of series of curved margin. Other structure visible include nipple, skin, blood vessels, duct, coopers ligament and axillary lymph node (David Sutton, 1998). A mammographic findings are divided into 2 groups that calcified and or deformed the normal breast architecture and these include isolated micro-calcification with no mass, calcification with mass, mass that irregularly marginated or speculated .The second group that non calcified and non deforming including isolated patchy or asymmetric densities and well circumscribed mass (Thomas *et al*., 2002; Elodia *et al*., 2003; Maes *et al*., 1997). The most common mammographic appearance of carcinoma is isolated or speculated mass with irregular border in addition to micro-calcification (Ronald and Grainger, 1997), mammography is the gold standard for detection of micro-calcification (Yang *et al*., 1997). Malignant clusters of micro-calcification contain more micro-calcification and occupied a larger area and had larger cluster perimeters than benign and exhibit a wide variety

of shape usually irregular shaped while benign be more rounded and smooth margin (Betal and Roberts, 1997). Ultrasound (US) Performed to evaluate specific area of abnormality discover clinically or at mammography (Stuart and Kaplan, 2001; Bo-Kyoung Seo *et al*., 2002). Normal US show the subcutaneous layer interiorly as low reflectivity compared to glandular tissue from which is separated by a well define scalloped margin, normal duct as anechoic tubular structure posteriorly is the retro mammary fat and behind structure of chest wall (David Sutton, 1998).

The important role of ultrasound in breast imaging for diagnosis cyst, palpable mass obscured by dense breast at mammogram, imaging guidance for percutaneous biopsy and localization. US is most valuable for determining whether the palpable abnormality is cystic or solid (Bo-Kyoung Seo *et al*., 2002). Cystic lesion is either simple cyst (anechoic mass with circumscribed border and acoustic enhancement), complicated cyst (homogenous low level echo), cluster micro-cyst (cluster of tiny 2-5 mm anechoic foci with no discrete solid component), cyst with septation (<0.5 mm thin septa or >0.5 mm thick septa) and intra-cystic mass (a discrete solid mural mass within a cyst) (Wendie Berg *et al*., 2003). Certain US feature can help differentiate benign from malignant mass. Benign mass is oval or rounded shape ,circumscribed margin, presence of edge refraction, width to AP dimension ratio >1.4 while malignant is speculated or micro-lobulated margin, irregular shape, ill define margin, width to AP dimension ratio of 1.4 or less (Guita Rahbar *et al*., 1999).

The use of less invasive needle biopsy technique for breast abnormalities has decreased morbidity and cost compared with those for open surgical biopsy (Oswald Graf, 2004). It quick, immediate report possible, can used for small lesions and highly sensitive in experience hands (Litherland, 2001). The decision to perform biopsy was made on basis of mammographic and US finding, (Oswald Graf *et al*., 2004) it established the diagnosis for mass and calcification ,if the biopsy result positive, suspect, strong imaging suspicion for cancer referred to surgical biopsy (Thomas Kolb *et al*., 2002).

Benign Breast Lesions

Fibroadenoma: The most common benign lesion of the breast, mammographically sharply outlined low soft tissue density lesion some time lobulated outline, usually solitary but may be multiple (David Sutton, 1998). On US usually ovoid with uniform low level internal echo and smooth, rounded or lobulated margin (Roger C. Sanders, 1998).

Adenosis: Mammographically seen as patchy or homogenous area of increase density it may contain micro calcification which may be the only finding, it regress with age and after menopause (Ronald G. Grainger, 1997).

Papilloma: Less common than fibro adenoma but show similar characteristic, single or multiple frequently found in anterior third of the breast, often develop coarse calcification (David Sutton, 1998).

Cyst: On mammogram rounded or oval well circumscribed mass, disappear or subside after menopause, usually bilateral and multiple, calcification infrequent but may be seen as egg shell (Ronald and Grainger, 1997). On US smooth with

enhancement and absence of internal echo (Roger Sanders, 1998).

Breast abscess: Usually retro areolar occurs in young primi-paraus women during lactation (Ronald Grainger, 1997). In US they have well defined border which is thick and irregular (Roger Sanders, 1998).

Galctocele: Develop during lactation 2-3 cm of mixed density (David Sutton, 1998). On US poorly outline, relatively echo free area with few internal echo (Roger Sanders, 1998).

Malignant breast lesion: Invasive ductal carcinoma: on mammogram consists of central soft tissue mass from which specula extends into surrounding tissue the larger the tumor the longer the specula with distortion of surrounding tissue (David Sutton, 1998). On US alternating echopenic and echogenic straight line radiating from the mass (Roger Sanders, 1998). Invasive lobular carcinoma: also presented as speculated mass (Ronald Grainger, 1997).

Medullary, mucinous and papillary carcinoma: The medullary type grows rapidly and most common in women less than 50 years of old while mucinous and papillary carcinoma have favorable prognosis and most occur in women over 50 years of old. The outline of these lesion is usually less sharply defined than benign one and of higher soft tissue density (David Sutton, 1998).

MATERIALS AND METHOD

The material of this study constitutes of 113 patients with age ranging between 15-73 years of age, presented to breast center then referred to mammographic, ultrasonic examination and finally the fine needle aspiration at pathology department at AL-Zahrawi Teaching Hospital. These patients were examined during the period of study from October 2005 to August 2006. Their physician requested these examinations as complains of patients such as palpable mass, discharge, nipple retraction, tethering of skin, this study concentrates on patients with palpable mass detected by themselves. The mammographic device is Gitto with KV 22-32. MAS 45-65, single emulsion film. Two views taken which are the standard view's cranio-caudal and lateral oblique with angulations 45 degree, in addition to compression. Kretz ultrasound diagnostic unit with linear array 7 MHZ transducer by using manual real time scanning. These patients were examined in supine position and the ipsi-lateral arm elevated above the head to flatten the breast against the chest wall. Scanning begins in circular way from the outside to the nipple to obtain a series of sagital Images. The longitudinal scan is better for examination of axillary region. The fine needle aspiration of palpable mass that visible either on ultrasound or mammogram can be biopsied by using fine needle (10 G) in order to obtain an aspirate containing cellular material. The aspirate is then delivered onto slide and dray and wet preparation made for cytological examination..

RESULTS

The total number of (113) selective patients who presented with breast mass as a result of breast self examination, their ages were ranging from 15-73 years. The highest number of patients was 35 patients (30.97%) within age group (30-39) years as shown in (Table 1) (Figure 1). Out of total 113

patients 55 patients (48.67%) were below 40 years of age, 96 patients (84.95%) were multi-para and 6 patients (5.30%) had positive family history of breast diseases and 16 patients (14.15%) had previous history of breast diseases and 24 patients (21.23%) on hormonal treatment as shown in (Table 2). (In this table single patient may harbor more than one feature). All 113 patients who had felt breast mass by self examination underwent combined examination (mammography and sonography). From those 81 patients (71.68%) had positive finding on combined examination and 32 patients (28.31%) had negative result on combined examination as shown in (Table 3). Out of total 113 patients 64 patients (56.61%) diagnosed to have benign masses on combined examination including 25 patients (22.12%) as fibro adenoma, 5 patients (4.42%) as fibro adenosis, 11 patients (9.73%) as breast abscess, 7 patients (6.19%) as breast cyst, 15 patients (13.27%) as ductactasia and one patients (0.88%) as lipoma and 17 patients (15.07%) diagnosed to be malignant by combined examination as shown in (Table 4). Patients with positive result were referred to fine needle aspiration cytology, 3 cases out of 25 patients which were diagnosed to be fibroadenoma by combined examination proved to be ductal carcinoma, and 7 cases out of 17 patients which was diagnosed as malignant masses proved later to be benign by fine needle aspiration and 4 cases as fibroadenoma and 3 cases as breast abscess as shown in (Table 5). In fine needle aspiration out of total 68 patients (60.14%) had benign mass including 26 patients (23.00%) was fibro adenoma , 5 patients (4.42%) was fibroadenosis, 14 patients (12.38%) was breast abscess, 7 patients (6.19%) was breast cyst, one patient (0.88%) was lipoma and 15 patients (13.27%) was ductactsia proved by follow up medical treatment and 12 patients (11.50%) had malignant mass all proved to be ductal carcinoma by F.N.A cytology as shown in (Table 6).

DISCUSSION

An important aspect of women practicing breast self examination (BSE) is the emphasis on self a wariness of anybody changes and also encourage taking responsibility for their own health. BSE shown to be associated with smaller pathologic tumor size at time of detection which reduces the extent of surgery and morbidity from breast cancer (Erskine and Crowe, 1998). Regarding age incidence patients below 40 years of age in the study done by C. E. Erskine *et al* study (Erskine and Crowe, 1998) were 181 patients (67.3%). In our study the number were 55 patients (48.67%) which is less than the author result and those who are multi-Para were 270 patients (60%) and in our study the number were 96 patients (84.9%) as shown in (Table 2). which is also less than the author study: In Linda Moy *et al* study (Linda Moy et al., 2002) the incidences of those with positive family history of breast disease were 99 patients (12%), and those with previous history of breast disease were 83 patients (10%) and those on hormonal treatment were 232 patients (28%). In C. E. Erskine *et al* study (Erskine, 1998) the incidence of those with positive family history were 101 patients (66.9%), those with pervious history of breast problem were 170 patients (64.9%) and those normal treatment were 59 patients (56.2%). While in our study the number of patients with positive family history were 6 patients (5.30%) and those with previous history of breast disease were 16 patients (14.1%) and those on hormonal treatment were 24 patients (21.33%) as shown in (Table 2). These result are nearly similar to that in Linda Moy *et al* study

(Linda Moy *et al*., 2002) and more or less differ from that in C. E. Erskine study (Erskine and Crowe, 1998). A large no. of these patients present for evaluation of self detected palpable abnormalities, many of which would be considered equivocal or not suspicious, however imaging with mammogram and sonogram is still consider a critical part for the evaluation to exclude a suspicious lesion (Mary Scott Soo *et al*., 2001). In our study we concentrate on those patients presented with breast masses detected by self examination. The combination of clinical examination, imaging (mammography and sonogram) and fine needle aspiration (triple test) has been widely used in breast assessment (Houssami and Irwig, 1998; Samlami *et al*., 1999). In Mahesh Shetty *et al* study (Mahesh Shetty *et al*., 2003) the incidence of patients underwent combined examination and had negative result was 186 (45.2%) and in our study the number was 32 patients (28.31%) as shown in (Table 3). and this result is less that than in author study. In Hazim H. Saleh *et al* study (Saleh and Rawaa Al-Chetachi, 2004) the incidence of those with positive result on combined examination was 27 (41.5%) while in our study the number was 81 patients (71.68%) as shown in (Table 3). This result is higher than that in author study.

In Mahesh K. Shetty *et al* study (Mahesh K. Shetty *et al*., 2003) and Hazim H. Saleh *et al* study (Hazim H. Saleh and Rawaa Al-Chetachi, 2004) the incidence of benign masses diagnosed by combined examination were 165 (40.1%) and 19 (70.4%) respectively. In our study the number of patients was 64 patients (56.63%). This result is more or less similar to that in authors studies. In Hazim H. Saleh *et al* study (Hazim H. Saleh and Rawaa Al-Chetachi, 2004) the incidence of malignant mass assessed by combined examination was 8(29.6%), in our study the number was 17 patients (15.04%) this result is nearly similar to that in author study. In Hazim H. Saleh *et al* study (Morris *et al*., 2002) incidence of fibroadenoma were 6 (33.3%), fibro adenosis 2 (7.4%), breast abscess 5 (18.5%), breast cyst 3 (11.1%) and ductactsia 3 (11.1). In our study the number of patients with fibroadenoma was 25 patients (22.12%), fibroadenosis 5 patients (4.42%), breast abscess 11 patients (9.73%) breast cyst 7 patients (6.19%) and ductactsia 15 patients (13.27%) as shown in (Table 4). This result more or less similar to that in author study.

It suggests that breast biopsy may be avoided in women with palpable abnormalities when both US and mammogram depict normal tissue at lump site (Hazim Saleh and Rawaa Al-Chetachi, 2004). The treatment of palpable abnormality is based on the result of physical examination if the lesion is suspicions; tissue sampling is warranted (Roger C. Sanders, 1998). In our study 66 patients (58.40%) underwent biopsy from 25 cases which was diagnosed to be fibroadenoma by combined examination 3 cases diagnosed by fine needle aspiration as carcinoma, this is due to well defined margin of the mass and homogenous texture also from 17 cases which was diagnosed by combined examination to be malignant, 2 cases found to be fibroadenoma and 1 case as breast abscess by fine needle aspiration, this is due to ill defined border & non homogenous texture of these masses as shown in (Table 5). In Hazim H. Saleh *et al* study (Hazim H. Saleh and Rawaa F. Al-Chetachi, 2004) the incidence of benign mass diagnosed by fine needle aspiration was 16(70.4%) in our study the number of patients was 68 patients (60.17%) this result more or less similar to that in Hazim H. Saleh *et al* study (Hazim H. Saleh and Rawaa F. Al-Chetachi, 2004) as shown in (Table 7).

Table 1. Showing age distribution of patient according to age

Age (in year)	No. of patients	%
10-19	7	6.194
20-29	13	11.504
30-39	35	30.973
40-49	31	27.433
50-59	21	18.584
60-69	4	3.539
70-79	2	1.769
Total	113	100%

Table 2. Showing some of characteristic feature of those patients presented with breast mass by self examination

Characteristic feature	No. of patients	%
Patients below 40 years	55	48.67
Patient who multi-para	96	84.95%
Patients with positive family history of breast disease	6	5.30%
Patient with pervious history of breast disease	16	14.15%
Patient on hormonal treatment	24	21.23%

Table 3. Showing result of combined examination of patients with feeling palpable masses

Patients underwent combined exam	No. of patients	%
Positive result in combined examination	81	71.68
Negative result in combined examination	32	28.31
Total	113	

Table 4. Showing distribution of patients according to combined examination

Benign	No.	%	Malignant	No.	%
Fibroadenoma	25	22.12	Carcinoma	17	15.04
Fibroadenosis	5	4.42			
Breast cyst	11	9.73			
Breast abscess	7	6.19			
Lipoma	1	0.88			
Ductactasia	15	13.27			
Total	64	56.61		17	

Table 5. Showing comparison between combined examination and result in fine needle aspiration

Disease	No. of patients on combined examination	%	No. of benign Mass in F.N.A	No. of malignant mass in FNA
Fibroadenoma	25	22.12	22	3
Fibroadenosis	5	4.42	5	0
Breast abscess	11	9.73	11	0
Breast cyst	7	6.19	7	0
Lipoma	1	0.88		
Carcinoma	17	15.04	7	10

Table 6. Showing results of fine needle aspiration

Disease	No. of patients	%
Fibroadenoma	26	23.00
Fibroadenosis	5	4.42
Breast abscess	14	12.38
Breast cyst	7	6.19
Lipoma	1	0.88
Ductal carcinoma	13	11.50
Ductactasia	15	13.27
Normal	32	28.31
Total	113	

Table 7. Showing comparison between our study and others

Author	Total No .of patients	No. of Benign mass	%	No. of malignant mass	%
Hazim H. Saleh study	65	19	70.4	8	29.6
Mahesh K. Shetty study	411			14	3.4
N. Houssami study	7259			147	2
Our study	113	68	60.17	13	11.50

Regarding the incidence of malignant mass in study done by N. Hossami *et al* study (Houssami and Irwig, 1998) was 147 (2%) and in Mahesh K. Shetty study (Mahesh K. Shetty *et al.*, 2003) was 14 (3.4%) and in Hazim H. Saleh *et al* study (Hazim H. Saleh and Rawaa F. Al-Chetachi, 2004) was 6 (29.6%) in our study the number of patient was 13 patients (11.50%) as shown in (Table 7). This result is nearly similar to that in Hazim H. Saleh *et al* study (Hazim H. Saleh and Rawaa F. Al-Chetachi, 2004) and higher than in others studies as shown in (Table 7). This high incidence of malignancy in our country could be due to wars in the last 2 decade and exposure to radiation and this indicates that breast self examination is very important in detection of breast masses.
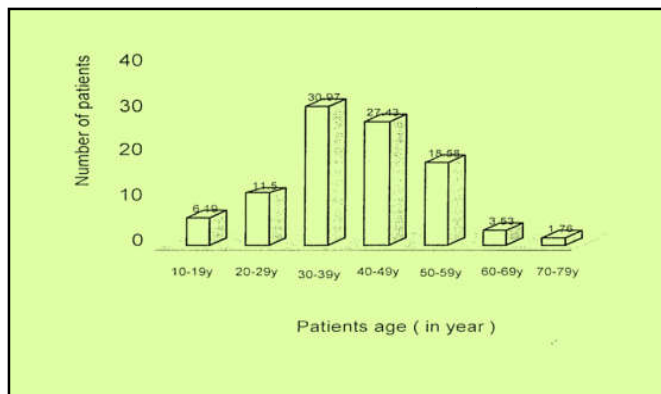

Fig. 1. Histogram showing distribution of the patients according to age group

Conclusion

This study reveals that breast self examination is reliable and valuable in early detection of breast masses in combination with triple test (mammogram, sonogram and fine needle aspiration). The commonest tumor was fibroadenoma (23%), and malignancy was (11.50%). Periodic breast self examination is advisable to improve mortality rate from breast cancer and we advise patients to consult the breast cancer center periodically.

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