

Results of mammography and conformity of these results with other clinical and para-clinical examination in Tabriz Behbood hospital

Somayyeh Naghizadeh¹, Parvin Mohebbi² and Mehdi Ebrahimpour³

¹*Department of Midwifery, Tabriz Branch, Islamic Azad University, Tabriz, Iran*

²*Department of Midwifery, Nursing and Midwifery Faculty, Zanjan University of Medical Science, Iran*

³*Nursing and Midwifery Faculty, Tabriz University of Medical Sciences, Iran*

ABSTRACT

This is a descriptive study conducted on 574 women over the age of 40 who were referred to the radiology unit in Tabriz Behbood hospital. A questionnaire was including demographic and midwifery characteristics, results of clinical breast exams (CBE) and mammography and reports of ultrasound or pathology for a number of samples. Descriptive and deduction statistics (chi-square and Mc Nemar) was used for statistical data analysis. The results of mammography were determined 54/6% normal findings, 12/9% mass and 32/5%, benign lesions. There was a statistical relation between the results of the CBE – mammography ($p=0.0001$), mammography – ultrasound ($p=0.0001$) and mammography – pathology ($p=0.0001$) results. Pathological survey was performed in 53 cases, so that 26 (43.3%) cases were identified with breast cancer.

Key words: mammography, clinical examination, Para-clinical examination

INTRODUCTION

Cancer is considered as a major health problem in this century (Greif 2010) which is the second mortality reason following cardiovascular diseases (Brunicardi et al. 2005). Breast cancer is the most common invasive cancer among women which infected 8 out of 10 women (Hirsch and Layman 2011) and is the most important mortality reason resulted from cancer in all over the world (Paesmans et al. 2010, Yanxin et al. 2010 Pakseresht et al. 2009). Although several progresses was made regarding premature diagnosis and proper treatment of this disease, still it is among 30% of all women malignity and second mortality reason resulted from cancer among women (Howell et al. 2005, Varangot et al. 2005).

According to the reports of World Health Organization (WHO) in Feb. 2009, breast cancer causes 519000 deaths in all over the world annually (World Health Organization 2010). In Iran, this disease has a high prevalence (Ghazanfari et al. 2005), such that, in recent years, this disease has been shown as the most common malignity among Iranian women (Mousavi et al. 2007). Breast cancer among Iranian population occurs 10 years younger than other countries (Sirus and Ebrahimi. 2009, Arirchi and Zarbakhsh 2004) and more than 30% of patients are younger than 30 years old (Mousavi et al. 2007). Meanwhile, almost 70% of Iranian women were in advanced stages of disease at the time of referring and in these conditions, the treatment is not effective (Behjati et al. 2005). This disease passes a long hidden phase and it takes 8 to 10 years to transfer a cancer cell to a tangible tumor; therefore, recognizing and diagnosing these masses at primary stages can save the patients from death (Fentiman 2001). Premature diagnosis of breast cancer leads to the genesis of screening plans and diagnosis of this disease at its primary stages. Screening is defined as secondary prevention. Secondary is used here because the disease is not preventable but it can prevent from its several complications (Farshbaf Khalili et al. 2009). The studies show that the

women's mortality participated in breast cancer screening is decreased by 40% (Rutledge et al. 2001). Mammography is one of the common non-invasive methods in breast examination which has diagnostic value in screening and detection of disease (Devolli-Disha et al. 2009).

Screening with mammography decreases the mortality in over 50 years women infected with breast cancer by 22% and decrease the mortality among infected women in 40-49 years old. Having considered the occurrence of breast cancer in younger ages in recent years and dense breast tissue in this group and the probability of hidden lesion in this kind of tissue, it seems necessary to have a complementary diagnostic method for increasing the diagnostic sensitivity. Therefore, ultrasound especially in risky and younger women seems necessary (Berg et al. 2008). So, Cancer Society of America has suggested mammography as a selective screening method of breast cancer in over 40 years old (Brunicardi et al. 2005).

Since breast cancer leads to mortality in 60-70% of persons who do not have specified risk factor (Keith Louis et al. 2002) and having considered that the women constitute the main part of the family and the problems resulted from this disease engage them and also the other family members and weaken the family foundation, therefore the early search and diagnosis of breast cancer is a method which will save the women and earlier diagnosis will accompany with better results and more survival (Bassett et al. 1991).

Since pathology is a standard and a decisive diagnostic method of breast diseases and this is not accepted by patients due to its invasiveness, the physicians try to use more non-invasive methods. Nevertheless, using these methods needs more studying for defining their diagnostic value considering the modern medical conditions in Iran, therefore, we decided to do a research entitled as studying the mammography results and conformity the results with other clinical and Para-clinical examinations in Tabriz Behbood Hospital.

MATERIALS AND METHODS

This is a descriptive study conducted on 574 women over the age of 40 who were referred to the radiology unit in Tabriz Behbood hospital. Women were initially clinical breast examination then they were undergoing Mammography if there were indications. The sampling method in this study was whole counting. It was such that all who needed mammography in a one-year period entered the study. A four-part questionnaire was used for gathering data in this research; part 1 was related to demographic particular (age, occupation, height, weight (BMI), diet, consumption of fruit and vegetables, marital status, infertility record, Menopause age, Menarche age, first pregnancy age, family record of breast cancer, personal record of breast cancer). The second part was related to the data obtained from breast examination (including color, tissue consistency, mastoptosis considering age, pain, secretions, symmetry of breast to the midsternal line, nipple symmetry to the midsternal line, palpation of mass in breast, palpation of mass in lymph nodes in the neck and armpits). The third part of the questionnaire is related to the results of mammography and the fourth part is related to data obtained from ultrasound and pathology results (if available).

The procedure was as follows: at the beginning, the demographic particular were studied for anybody referring over the age of 40 years and were registered in the questionnaire. Then patients were undergoing breast clinical examination by a trained midwife and the results of the examination were registered in the questionnaire. Since all the subjects are over 40 years old, the entire person was undergone mammography and the results of mammography were registered in the questionnaire. It shall be noted that ultrasound was done, if the mammography results were questionable. Having considered the data from clinical examination, mammography and ultrasound, the patients were undergoing a full diagnostic program. Such that they were referred to a surgeon (surgeon chose were done by the patient, they can use from the surgeon in Behbood hospital or other treatment centers) for doing FNA or a biopsy. At next phase, the patients were followed and their pathology results were registered in the questionnaire. It shall be noted that all mammography and ultrasound were done on Behbood center and interpretation of all of them were done by a skilled radiologist. The permission for doing the research was obtained from the head of a hospital before studying onset. Then necessary information were given to all research units regarding the aims and methods of study and voluntarily attendance in the study, confidentiality of data and if they were willing, they could leave the study at any time.

SPSS (ver. 13) was used for data analysis. Descriptive statistics were used for studying the demographic particular, the results of mammography, CBE, ultrasound and pathology. Chi-square and Mc Nemar were used for studying the relationship between clinical and Para-clinical examinations.

RESULTS

The results of study showed that the average age of subjects in the study was 38.8 ± 10.8 years old. 94.4% of samples were married and 5.1% has infertility. The mean and standard deviation of child number was 2.4 ± 1.7 . 94.8% had ordinary diet, 80.6% reported the consumption of fruit and vegetables in the usual range. The most common methods of contraception were withdrawal method (25%), tubal ligation (12.6%) and IUD (10.5%) and only 10% used hormone methods for contraception. 10.8% reported positive family record of cancer of which the most related to first degree relatives and then second degree relatives. Regarding cancer record, only 2 cases mentioned this record. The remaining specifications of the research unit are brought in table No. 1 (Table 1).

Table 1: The specifications of the research unit

The specifications		N (%)
Age $38/8 \pm 10/8$	Less than 30 years	137(23/8)
	30-50	366(63/8)
	More than 50 years	69(12/1)
BMI $28/18 \pm 5$	Less than 19/8	23(4)
	19/9-26	158(27/6)
	26/1-29	122(21/2)
Job	More than 29/1	220(38/3)
	housewives	529(92/3)
first pregnancy age $20/1 \pm 3/8$	employed	45(7/7)
	Less than 18 years	197(34/4)
	18-35	300(52/4)
Menarcho age $13/2 \pm 1/03$	More than 35 years	1(0/2)
	Less than 10 years	7(1/2)
	10-16	500(96/3)
Menopause age $46/3 \pm 5/7$	More than 16	8(1/3)
	30-40	14(17/9)
	41-50	46(59)
	51-60	18(23/1)

All the subjects were undergoing breast clinical examinations before mammography. Studying color, tissue consistency, mastoptosis considering age, pain, secretions, symmetry of breast to midsternal line, nipple symmetry to midsternal line, palpation of mass in breast, palpation of mass in lymph nodes in the neck and armpits showed that the consistency in left and right breasts were 27.1% and 23.3% unnatural respectively, regarding pain in the breast, 51.1% and 43% had pain, regarding mass in the breast, 33.6% and 26.5% had mass. The specification of the right and left breast has been shown in table No. 2 using the clinical examinations (table 2).

Table 2: The specification of the right and left breast to using the clinical examinations

The results obtained from CBE	Left Breast	Right Breast
	N (%)	N (%)
Breast Pain	487(85/1)	410(71/7)
Breast tissue abnormal consistency	183(32)	147(25/7)
Abnormal mastoptosis considering age	11(1/9)	15(2/6)
Abnormal color	11(1/9)	14(2/4)
Secretions of breast	39(6/8)	39(6/8)
Asymmetry of breast to the midsternal line	12(2/1)	17(3)
Nipple asymmetry to the midsternal line	8(1/4)	9(1/6)
Palpation of mass in breast	212(37/1)	166(29)
Palpation of mass in lymph nodes in the neck	6(1)	9(1/6)
Palpation of mass in lymph nodes in the armpits	32(5/6)	34(5/9)

On the whole, the results of breast examination among women in Behbood Hospital showed that 63.4% of women had unnatural results.

Out of the 574 who were undergone mammography, only mammography was done on 386 women (64.1%), mammography and ultrasound were done on 153 women (26.6%), mammography and pathology were done on 33 women (5.8%) and mammography, ultrasound and pathology were done on 20 women (3.5%).

Studying the results of mammography showed that 54.6% reported natural, 12.9% mass, 32.5% benign tumors (Fibrocystic, Fibroadenomas, Cyst, Lymph nodes, increasing density, decreasing density, Calcification, fatty breast. The results obtained from mammography are shown in Table No. 3 (Table 3).

Table 3: The results obtained from mammography

results	Mammography
	N (%)
Normal	310(53/8)
Fibrocystic	20(3/5)
Fibro adenoma	9(1/6)
Cyst	14(2/4)
Lymph nodes	26(4/5)
high density	59(10/3)
low density	10(1/7)
Mass	74(12/9)
Calcifications	43(7/5)
Fatty Breast	10(1/7)
Total	576(100)

In order to determine the relationship between mammography and CBE results, first mammography results were divided as natural and unnatural and unnatural results included mass, Fibrocystic benign tumors, Fibroadenomas, Mastitis, Cyst, Lymph nodes, increasing and decreasing density, Calcification, fatty breast and Abscess. MC Nemar statistical tests showed that there was a statistically significant relationship between CBE and mammography results ($P=0.0001$).

173 women were undergoing ultrasound who were over 35 years old and whose mammography results were questionable. MC Nemar test specified that there was a statistically significant relationship between mammography and ultrasound results ($P=0.0001$). The results of Para-clinical examinations together with mammography and ultrasound were brought in Table No. 4 (table 4).

Table 4: The results of Para-clinical examinations together with mammography and ultrasound (N=173)

Mammography	Ultrasound		p-value
	Normal	Abnormal	
Normal	42(24/3)	12(6/9)	$P=0/0001$
Abnormal	70(40/5)	49(27/3)	$\chi^2=39/6$
173(100)			

According to the mammography results, 53 women (9.2%) were undergone pathology. Regarding the pathology results, 26 women (43.3%) had breast cancer, 7 women (13.9%) had natural finding, 12 women (23.6%) had Fibrocystic, 6 women (11.1%) had Fibroadenomas and 2 women (4.1%) had fatty breast.

Chi-square test on pathology results of 53 women who were undergone biopsy or FNA showed that there was statistically significant relationship between pathology and mammography results ($P=0.0001$) (the mammography and pathology results were divided into two parts of natural and unnatural of which the natural results included the natural findings together with Fibrocystic benign tumors, Fibroadenomas, Mastitis, Cyst, Lymph nodes, increasing and decreasing density, Calcification, fatty breast and Abscess and unnatural results included mass).

DISCUSSION AND CONCLUSION

About 1.3 million persons are diagnosed with breast cancer annually (Panieri et al. 2012). Ever-increasing use of imaging methods such as mammography and ultrasound are important steps toward premature diagnosis of breast cancer and has considerable effects on living increasing of these patients.

Several clinical trials showed that mammography screening for breast cancer are successful for diagnosis of breast cancer at the primary stages (Tan et al. 2007). In the current study, the mass report by mammography was 12.9% and benign tumors were 32.5%. The results of mammography in a study by Shakouri Partovi and Nami on studying 1000 women over the age of 40 showed that 13 women had malignant tumors, 34 women had mass or benign small nodules, 10 women had inactive calcification and 6 women had fatty breast (Shakouri Partovi and Nami 2005). In our study, the mass, benign tumors and calcification were more than the study by Shakouri Partovi and Nami. Meanwhile, in a study by Shafighi of 979 samples, 250 women of indication were undergone mammography of which 62.8% reported natural findings, 17.4% reported fibrocystic changes and 19.8% reported benign tumors (Shafighi et al. 2008). The results of our study were mostly consistent with the results of study by Shafighi. Mahboubi and et.al showed in their study that 20% of mammography results were unnatural. These unnatural ones included mass (14%) and also benign tumors such as increasing density (Mahbobi et al. 2005). In current study, they were pain, mass in breast, unnatural tissue consistency of common findings in clinical examinations of persons

referring to Behbood Hospital which had consistency with the results of several studies which mentioned breast palpation as the second common reason for patients' referring (Sirous and Ebrahimi 2009, Barton et al. 1999, Elmore et al. 1998). The results showed that there is a statistically significant relationship between mammography and CBE results.

In this study, the women whose mammography results were reported as questionable were undergone mammography and it was specified that there is a statistically significant relationship between the results of mammography and ultrasound results such that 6.9% reported unnatural findings in both of them and 24.3% reported natural findings in both of them. Shafiqhi & et.al in the study confirmed the lower of ultrasound compared to mammography in diagnosing the breast tumors (Shafiqhi et al. 2008).

Breast cancer is diagnosed by a combination of findings resulted from clinical examinations, imaging methods and biopsy (Shafiqhi et al. 2008). In the current study, a statistically significant relationship was obtained between clinical and Para-clinical examinations.

In a study by Prasad and Housrrkovad, showed the higher sensitivity of using both mammography and ultrasound methods compared to doing one of them in assessing the breast masses. Meanwhile, it announced that since density is the limiting factor of mammography, ultrasound causes increasing the diagnostic sensitivity (Prasad and Housrrkovad 2007). Meanwhile, Berg and et.al in their study came to the conclusion that a proper screening technique shall be used apart from mammography and in this study, ultrasound as recommended for women with average risk (Berg 2009).

In a study by Shetty and Watson during 1998 to 2006, among 32 patients ranged from 38-70 years old, mass in mammography study, it was observed that in studying ultrasound, mass or an abnormality localized was non-diagnosable. Out of 32 women who were undergone pathology, 28 reported benign (18 fibrocystic changes, 8 fibroadenomas, 1 fat necrosis and 1 adenosis and 4 others were malignant (Shetty and Watson 2008).

According to mammography results for 53 patients, Biopsy or FNA was done and according to pathology results of these patients 26 cases of breast cancer were diagnosed. Meanwhile, there obtained statistically significant relationship between pathology and mammography results.

In a study by Sina and et.al, the results of 1004 mammography which were done in Imam Khomeini Educational center in 1997-1998 were studied and were compared with results of several pathology findings. In this study on the 1004 results of mammography, 15.4% had masses of which 56% reported benign tumors, 17 % malignant tumors and the remaining reported non-tumor findings. Having compared the results with pathology results, the conformity of 72.8% between pathology and mammography results were obtained (Sina et al. 2002). The results of our study are consistent with Sina's study.

The results of study showed that mammography is a non-invasive and cheap method for diagnosing breast cancer for women over 40 years old and has high efficiency. Meanwhile, mammography along with detailed CBE and ultrasound is recommended as an effective action for diagnosing breast cancer. Therefore, regarding the results, the breast problems can be diagnosed on time and prevent from disease progression by widespread accurate educational planning.

Acknowledgement

I do express my deep appreciation to the head of Tabriz Behbood Hospital, Mr. Bahman Zijah and also the specialists and surgeons of this hospital.

REFERENCES

- [1] Arirchi I, Zarbakhsh M (2004). *Asi Pac J Cancer Prev*, 5(1):24-27.
- [2] Barton MB, Elmore JG, Fletcher SW (1999). *Ann Intern Med*, 130:651.
- [3] Bassett LW, Ysael M, Gold R (1991). *Radiology*, 180(3), 831-835.
- [4] Behjati F, Atri M, Najmabadi H, Nouri K, Zamani M (2005). *Pathology oncology research*, 11(3):157-163.
- [5] Berg WA. (2009). *AJR*; 162, 390-99.
- [6] Berg NS, Blum JD, Cormack JB, Mandelson EB, Lehrer D, Marcela BV, et al (2008). *JAMA*, 299(18):2151-2163.
- [7] Brunnicardi F.C, Dana K.A, Timothy R.B, Dunn L, Hunter G, Raphael E.P (2005). (Schwartz's principles of surgery. 8th ed. McGraw-Hill, P. 453-501.
- [8] Devolli-Disha E, Manxhuka-Kërliu S, Ymeri H, Kutllovci A (2009). *Bosn j Basic Med Sci*, 9:131 – 6.
- [9] Elmore JG, Barton MB, Mocerri VM, et al (1998). *N Engl J Med*, 338:1089.

- [10] Farshbaf Khalili A, Shahnazi M, Ghahvechi A, Thorabi Sh (2009). *Nursing Research Journal*, 4(12,13):27-38.
- [11] Fentiman IS. (2001). *Int J Clin Part*, 55(8):527-530.
- [12] Ghazanfari Z, Mohammad Alizadeh S, Azat talab F (2005). *Journal of Kerman Razi Faculty of Nursing & Midwifery*, 4(1, 2):7-12.
- [13] Greif J.M (2010). *The Breast*, 19:268-272.
- [14] Hirsch B.R, Layman G.H (2011). *Curr Oncol Rep*, 13:63-70.
- [15] Howell A et al (2005). *Nat Clin Prant Oncol*, 2(12):635-646.
- [16] Keith Louis G, Oleszczuk Jaroslaw J, Layuens M. (2002). *J Womens Health Gend Bused Med*, 11(1), 17-25.
- [17] Mahbobi A, Alvandi SH, Alizadeh Navaee R (2005). *Journal of Babol University of Medical Sciences*. 6(2), 52-55.
- [18] Mousavi SM, Montazeri A, Mohagheghi MA, Jarrahi AM, Harirchi I (2007). *The Breast Journal*, 13(4):383-391.
- [19] Paesmans M, Ameye L, Moreau M, Rozenberg S (2010). *Maturitas*, 66:263-267.
- [20] Pakseresht S, Ingle GK, Bahadur AK, Ramteke VK, Singh MM, Garg S, et al (2009). *Indian J Cancer*, 46(2):132-138.
- [21] Panieri E (2012). *Breast Practice & research clinical obstetrics and Gynecology*, 1-8.
- [22] Prasad NS, Housrrkovad A (2007). *Biomed PapmMed Fac Univ Palacky Olomouc Czech Repub*, 151(2), 315-22.
- [23] Rutledge DN, Barsevick A, Knobf MT, Book binder M (2001). *Oncol Nurs: Forum*, 28(6):1032-1040.
- [24] Shafighi S, Bayati A, Rafiee M, Kalanteri M (2008). *Iran Surgery Journal*, 15(3).
- [25] Shakouri Partovi P, Nami F (2005). *Armagan danesh Journal* .9(35), 67-73
- [26] Sina A, Galili A, Abdi B, Gharar Aghaji R (2002). *Journal of Urmia University of Medical Sciences*, 13(3), 213-219.
- [27] Sirous M, Ebrahimi A (2009). *Iran Surgical Journal*, 16(3):1-6.
- [28] Shetty M.K, Watson A.B (2008). *Clinical Imaging*, 32, 28-31.
- [29] Tan S.M, Evans A.J, Lam T.P, Cheung K.L (2007). *The Breast*, 16, 113-119
- [30] Varangot M et al (2005). *Oncol Rep*, 14(2):537-545.
- [31] World Health Organization (W.H.O) (2010).
Available from: <http://www.Who.int/mediacentre/factsheets/fs297/en/index.html>.
- [32] Yanxin S, Hong W, Ying w, Yanhuni G, Hengda C, Yingtao Z, et al (2010). *Eur J Radiol*,75(1):136-141.