

# Impact of The Method of Diagnosis on The Stage of Breast Carcinoma

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## ABSTRACT

**Objective:** Screening mammography is recommended to women at a certain age to achieve an early diagnosis. The purpose of this study is to find out how breast carcinoma was diagnosed and the impact of the method of diagnosis on the stage of the tumor.

**Materials and Methods:** In this study, 903 operated breast cancer patients, between 2010-2016, in a large volume Marmara University İstanbul Pendik Education and Research Hospital were analyzed retrospectively. Patients presenting with clinical symptoms and those diagnosed with screening were investigated separately. The percentage of the patients diagnosed with symptoms and the impact of the method of diagnosis on the stage of the tumor was the primary outcome of the study.

**Results:** 738 patients fulfilling inclusion criteria with complete clinical records were analyzed. 126 patients (17%) were in the age range of 19-39 years, while 32% (236 patients) were 40-50 and 51% (376 patients) were older than 50 years.

485 patients (65.7%) were diagnosed with a mass in the breast, while 241 (32.6%) patients were diagnosed with screening with mammography. Twelve patients (1.7%) presented with nipple discharge. Median tumor sizes measured in the resected specimen were 22 mm, 21 mm, and 21 mm in patients diagnosed with a mass, screening, and nipple discharge respectively. The difference among the groups were not significant ( $p=0.460$ ).

Axillary lymph nodes were positive in 210 (43.3%) of patients presenting with a mass in the breast while 85 patients (35.3%) diagnosed with screening had metastatic lymph nodes in the axilla. Three patients presenting with nipple discharge had positive axillary lymph nodes ( $p=0.137$ ).

**Conclusion:** This study demonstrated that breast cancer screening programs in Turkey needs improvement and at the same time shows that screening with mammography after 40 years of age should be done annually despite Ministry of Health recommendations.

**Keywords:** Patient, breast cancer, mass, screening, discharge

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## Introduction

Breast cancer is the most prevalent malignant tumor among women in the world, accounting for almost 30% of all cancers in the female sex, with nearly 1.7 million new cases diagnosed in 2012. Breast cancer is the most common malignancy in United States, accounting for more than 40.000 female deaths each year (1, 2).

Mammography is the gold standard to detect breast cancer at an early stage and, when followed up with appropriate diagnosis and treatment, reduces mortality from breast cancer (3). However, meta-analysis of studies has revealed contradicting results (4).

Screening decisions should take into account an individual woman's risks of breast cancer and her values and preferences, weighing the potential benefits and harms of screening (5). The characteristics of each country is important to identify the initial screening time and frequency. The majority of breast cancers in the United States are diagnosed as a result of an abnormal screening study, although a significant number cases are first brought to attention by a patient (6).

In Turkey, breast cancer awareness programs conducted by the Ministry of Health has been ongoing for almost 30 years and screening mammography for women 40-69 years of age, every two years, is recommended (7, 8). However, screening programs are far from perfect.

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Estimating an individual woman's absolute risk for breast cancer is essential for decision making about screening and preventive recommendations (9). Developing improved methods for breast cancer risk prediction could facilitate the targeting of interventions to women at highest risk, thereby reducing mortality, while sparing low-risk women the costs and inconvenience of unnecessary testing and procedures (10).

The purpose of this study is to find out how breast carcinoma was diagnosed and the impact of the method of diagnosis on the stage of the tumor. In this study, operated breast cancer patients in a large volume university hospital were analyzed retrospectively. Patients presenting with clinical symptoms and those diagnosed with screening were investigated separately. The percentage of the patients diagnosed with symptoms and the impact of the method of diagnosis on the stage of the tumor was the primary outcome of the study.

## Materials and Methods

In this study, patients diagnosed and operated for breast carcinoma were analyzed retrospectively. 903 patients were operated in Marmara University Istanbul Pendik Education and Research Hospital, Istanbul, Turkey in 2010-2016. All female patients older than 18 years diagnosed with breast carcinoma were included in the study. Male breast carcinoma patients and patients receiving neoadjuvant treatment were excluded.

All patients had a preoperative diagnosis with core needle biopsy. Patients were either treated with mastectomy or breast conserving surgery. Sentinel lymph node (SLN) biopsy was done to all patients without palpable lymph nodes after staining with isosulfan blue. Patients with a positive SLN biopsy underwent axillary dissection. Patients with clinically palpable nodes were treated with axillary dissection.

Patients with complete records were analyzed retrospectively regarding their clinical presentation before diagnosis. Patients were grouped as those presenting with a mass in the breast, presenting with nipple discharge, and those diagnosed with screening mammography. Tumor size, tumor grade, and axillary lymph node status were recorded for each patient.

Ethics committee approval was received for this study from the ethics committee of Marmara University Institute of Health Science.

## Statistical analysis

Data was evaluated using the "Statistical Package for the Social Sciences for Windows 17.0" (SPSS Inc., Chicago, IL, USA) software. Patients' data were defined as percentages, mean  $\pm$  standard deviation (SD), and median (minimum-maximum). The independent student test was used to compare categorical data. The results were evaluated in confidence interval of 95% and significance level of  $p < 0.05$ .

## Results

Out of 903 patients, 8 male breast carcinoma patients and 130 patients receiving neoadjuvant treatment were excluded. 27 patients having their first operations elsewhere and scheduled for reoperation were also excluded.

738 patients fulfilling inclusion criteria with complete clinical records were analyzed. The mean age of the patients was 52.7 ( $\pm 11.9$ ) years. 126 patients (17%) were in the age range of 19-39 years, while 32% (236 patients) were 40-50. and 51% (376 patients) were older than 50 years.

485 patients (65.7%) were diagnosed with a mass in the breast, while 241 (32.6%) patients were diagnosed with screening with mammography. Twelve patients (1.7%) presented with nipple discharge. Median tumor sizes measured in the resected specimen were 22 mm (1-170), 21 mm (0-90), and 21 mm (6-86) in patients diagnosed with a mass, screening, and nipple discharge respectively. The difference among the groups were not significant ( $p = 0.460$ ).

Axillary lymph nodes were positive in 210 (43.3%) of patients presenting with a mass in the breast while 85 patients (35.3%) diagnosed with screening had metastatic lymph nodes in the axilla. Three patients presenting with nipple discharge had positive axillary lymph nodes. There was no significant difference among the groups ( $p = 0.137$ ).

A great majority of patients in all groups had either grade III or IV tumors. Tumor grades were not significant among the groups ( $p = 0.123$ ) (Table 1).

126 patients were younger than 40 years. Considering that mammography is not indicated or ineffective for these patients, of the remaining 612 patients' diagnosis was made with a mass in the breast in 391 (63.9%) (Table 2).

Table 1. Tumor characteristics of patients

VISIT MOTIVE		MASS N=485		SCREENING N=241		NIPPLE DISCHARGE N=12		TOTAL N=738		p
		n	%	n	%	n	%	n	%	
TUMOR SIZE (mm)	Median	22	21	21						0.460
	Min.- max.	1 - 170	0 - 90	6 - 86						
AXILLARY LYMPH NODE	POSITIVE	210	43	85	35	3	25	298	45.4	0.137
	NEGATIVE	275	57	156	65	9	75	440	54.6	
GRADE	G0	35	7	12	5	0	0	47	6	0.123
	G1	45	9	24	10	3	25	72	10	
	G2	240	50	123	51	7	58	370	50	

Table 2. Tumor characteristics of patients aged 40-69

VISIT MOTIVE		MASS N=391		SCREENING N=210		NIPPLE DISCHARGE N=11		TOTAL N=612		p
		n	%	n	%	n	%	n	%	
TUMOR SIZE (mm)	Median	23	21	21						0.460
	Min.- max.	0 - 170	0 - 90	6 - 80						
AXILLARY LYMPH NODE	POSITIVE	184	47	88	42	4	36	276	45	0.138
	NEGATIVE	207	53	122	58	7	64	336	55	
GRADE	G0	36	9	25	12	0	0	61	10	0.125
	G1	64	16	47	22	4	36	115	19	
	G2	291	75	138	66	7	64	436	71	

## Discussion and Conclusion

This study revealed that majority of patients (65.7%) operated for breast carcinoma in a large volume Marmara University Istanbul Pendik Education and Research Hospital were diagnosed with a mass in the breast, while only 32.6% of patients were diagnosed with screening mammography. Median tumor sizes measured in the resected specimens were 22 mm, 21 mm, and 21 mm in patients diagnosed with a mass, screening, and nipple discharge respectively without any significant differences.

High median tumor sizes in those patients diagnosed with screening implicate that screening is not being done effectively. Most commonly, patients seek for medical help with pain in the breast and physicians direct them for mammography which in fact should not be considered as screening. With such high median tumor sizes, with careful examination, most of these tumors should be palpable. Unfortunately, most unexperienced physicians depend on mammography rather than clinical examination. Furthermore, the high patient load in many hospitals prohibits appropriate clinical examination (11, 12).

The percentage of patients having axillary lymph node metastasis was also similar in groups diagnosed with a mass in the breast and diagnosed with screening (43.3% and 35.3% respectively,  $p=0.213$ ). When the similar sizes of tumors diagnosed are considered, this result is to be expected. Furthermore, the tumor grades were found to be similar in the groups studied ( $p=0.123$ ).

This study clearly demonstrates that screening for breast carcinoma in Turkey is far from perfect. Causes are probably multifactorial. Poor educational status and inadequate public awareness are the two leading causes. As this study was done in a Marmara University Istanbul Pendik Education and Research Hospital in the most populated city in Turkey, access to health care should not be a limiting factor. However, health care is given to patients paying their premiums to Social Security Institution (SGK). Considering the high unemployment rate and high number of unregistered work force in Turkey, this may be a contributing factor even in a large metropole as Istanbul.

The median size of the tumors diagnosed with screening is also alarming. As the median size is 21 mm, most of these tumors should be clinically detectable. Diagnosis with radiological and biochemical investigation is the current trend sometimes prohibiting careful history taking and clinical examination. Turkey has a very high yearly doctor visit rate when

compared with other OECD countries (8.5 vs 6.6) (12, 13). This is even more surprising as Turkey has the youngest population among these countries. The physician workload is high reaching 50-100 consultations a day and consultation lengths of less than ten minutes (11).

49% of patients operated for breast carcinoma in this study group were 50 years old or younger. This finding is important because The Ministry of Health recommends screening with mammography after 40 years every two years. Considering the high number of young patients diagnosed with breast carcinoma, a span of 40-50 years needs special attention. When diagnosed with a mass in the breast or nipple discharge usually tumor stage increases. Late diagnosis is most commonly associated with higher tumor stage and worse prognosis.

Although, this study is from a single center and represents a small sample, the same results were found in the national database. Ozmen analyzed 20 000 patients in the National Database and the mean age was 51.8 years for patients with breast carcinoma. 47% were younger than 50 years. The results are almost identical (14). Our findings and national database clearly indicate that screening for breast carcinoma should begin before 50 years in Turkey.

In this study, the prognosis and recurrence rates were not investigated. Therefore, the impact of late diagnosis and big tumor sizes on prognosis is not given. Considering high number of positive lymph nodes in the axilla and big tumor sizes, early diagnosis with appropriate screening programs may improve prognosis.

This study indicates that breast cancer screening programs in Turkey needs improvement and at the same time shows that screening with mammography after 40 years of age should be done annually despite Ministry of Health recommendations.

**Ethics Committee Approval:** Ethics committee approval was received for this study from the ethics committee of Marmara University Institute of Health Science.

**Informed Consent:** Informed consent was not taken due to retrospective design of the study.

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Resource - A.E., G.K., S.D.,D.Z., G.K.; Materials - M.Ü.U.; Data Collection and/or Processing - G.K., S.D., D.Z., G.K.; Analysis and/or Interpretation - A.E., G.K., S.D., D.Z., G.K., A.Ö.A.; Literature Search - G.K., S.D., D.Z., G.K.; Writing Manuscript - A.E., G.K., S.D.,D.Z., G.K., A.Ö.A.; Critical Reviews - A.E., G.K., S.D.,D.Z., G.K., A.Ö.A.

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