Prevalence of Breast Cancer among Patients with Non-Bloody Breast Discharge

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Abstract

Background: Up to 80% of women will have an incidence of nipple discharge, making it the third most prevalent breast-related symptom. Nipple discharge is usually considered as physiologic if it is bilateral, non-bloody from multiple ducts and not associated with mass, pain or hormonal disturbance. Mammography has a poor sensitivity for abnormality identification in individuals with pathologic nipple discharge. As a result, other tests including galactography, ultrasound, MRI, and cytology must be added to mammography. Diagnostic mammography and sub areolar ultrasound are the preferred imaging modalities for pathologic nipple discharge.

Aim: Objective of the study is to evaluate the incidence of breast cancer among women complain of non-bloody breast discharge.

Subject and methods: 150 female patients went to general surgery outpatient clinic in Al-Azhar university hospitals and fakous general hospitals.

Results: 8% were carcinoma, while 56.7% of the patients were benign and there were 35.3% of the patients had inconclusive results. There is a significant difference regarding single duct discharge.

Conclusion: Non-bloody pathological breast discharge was a breast cancer risk factor in our sample of 43.52 ± 8.8-year-old women. The preponderance of unilateral cases was observed. Prevalent were mastalgia, nipple inversion, and generalized lumpiness. Most discharges occur naturally. 8% of instances were cancerous, whereas 92% are benign. The majority of malignant lesions were DCIS, whereas benign lesions were papilloma. Single duct and Active discharge were uniquely offered.

Keywords: Breast cancer, Nipple discharge, Non-bloody breast

1. Introduction

After breast discomfort and breast mass, nipple discharge is the third most frequent breast-related complaint. Up to 80% of women throughout their reproductive years may have nipple discharge at some point.[1]

Nipple discharge is usually considered as physiologic if it is bilateral, non-bloody from multiple ducts and not associated with mass pain or hormonal disturbance.[2]

One to 3% of women with breast cancer and 10–15% of women with benign breast illnesses have both reported experiencing nipple discharge.[3]

However, individuals with bloody or serous nipple discharge had greater rates of cancer and papilloma. Only 6% of patients with discharges that had secretory components (milky/watery) had papillomas.[4]

In the event of discharge, the proper work-up may include mammography, ultrasound, and measurements of prolactin and TSH as well as other hormones.[5]

Diagnostic mammography and sub areolar ultrasound are the preferred imaging modalities for pathologic nipple discharge.[6]

The study's goal was to assess the incidence of breast cancer among women complain of non-bloody breast discharge.

2. Patients and methods

This was a prospective non randomized research including female complains of non-bloody breast discharge, 150 female patients.

2.1. Place and duration

This work was on patients coming to general surgery outpatient clinic in Al-Azhar university hospitals and fakous general hospital.

2.2. Duration of study: 18 months

At the beginning, ethical committee approval was obtained. Consent was taken from every patient included in the research. Patients were subjected to diagnostic workup including: History taken, clinical evaluation, cytology of the discharge, radiological investigations (mammography and ultrasound) and laboratory investigations if needed.

Negative patient for malignancy was re-evaluated after 3&6 months interval from first assessment.

2.3. Inclusion criteria

Patients with age between 20 and 60 years, female gender and non-bloody breast discharge (excretion).

2.4. Exclusion criteria

Patients under 20 or above 60 years old, male gender, patients with palpable mass, history of breast cancer, bloody discharge (excretion) and lactating women.

2.5. Follow-up

This study was Prospective non randomized Study for The Prevalence of Breast Cancer among patients with non-bloody nipple Discharge.

2.6. First seen

Patients were evaluated with history taken, clinical evaluation, cytology of nipple discharge and imaging and further management according to the finding.

2.7. At 3rd-month follow-up

Re-evaluation (clinical & cytology of the discharge if still present).

2.8. At 6th month follow -up

Clinical evaluation, Imaging like u/s and Cytology of the discharge if still present.

Any patient discovered to have malignancy during the study managed according to guideline.

2.9. Statistical analysis

Utilizing SPSS 22.0 for Windows (SPSS Inc., Chicago, IL, USA) and MedCalc 13 for Windows, all data were gathered, tabulated, and statistically evaluated (MedCalc Software bvba, Ostend, Belgium). Using the Shapiro Walk test, the distribution of the data was examined for normality. Frequencies and relative percentages were used to depict qualitative data. The variance between the qualitative variables was calculated using the chi square test (χ^2) and Fisher exact, as shown. Quantitative information was presented as mean ± SD (Standard deviation). For parametric and non-parametric variables, respectively, the Independent T test and the Mann Whitney test were employed to quantify the difference between quantitative variables in two groups. Every statistical comparison used a two-tailed significance test. Level of P value $\leq$ 0.05 denotes a substantial variation, $P < 0.001$ denotes a very substantial variation, and $P > 0.05$ denotes no difference at all.

3. Results

Table 1 shows that age of the study population ranged from 24 to 58 years with mean BMI was 25.75 kg/m^2 and (55.3%) of them were rural (Table 2).

This table shows that 74% of the patients had unilateral discharge and 26% of the patients had bilateral discharge. 56% of the patients had a clear or serous discharge, 24% of the patients had milky discharge, and 20% of the patients had green discharge (Table 3).

Table 1. Demographic distribution of the studied patients.

	All patients (n = 150)
Age (years)	
Mean ± SD	43.52 ± 8.72
Range	24—58
20—30 years	5 (3.3%)
30—40 years	17 (11.3%)
40—50 years	70 (46.7%)
>50 years	58 (38.7%)
BMI (kg/m²) Mean ± SD	25.75 ± 2.64
Residence	
Rural	83 (55.3%)
Urban	67 (44.7%)
Postmenopausal	69 (46%)

Table 2. Discharge laterality and color distribution among the studied patients.

	All patients (n = 150) N (%)
Laterality	
Unilateral	111 (74%)
Bilateral	39 (26%)
Color	
Clear/serous	84 (56%)
White/Milky	36 (24%)
Green	30 (20%)

Table 3. Associated symptoms distribution among the studied patients.

	All patients (n = 150) N (%)
Mastalgia	45 (30%)
Nipple inversion	24 (16%)
Nipple pruritus	5 (3.3%)
Nipple erythema	3 (2%)
Generalized lumpiness	11 (7.3%)
Axillary lymphadenopathy	5 (3.3%)

This table shows that most common symptoms was mastalgia (30%) followed by nipple inversion (16%) then generalized lumpiness (7.3%) (Table 4).

This table shows that 88.7% of the patients had spontaneous discharge, 36.7% had single duct discharge, and 34% had persistent discharge while 30.7% had active discharge at presentation (Table 5).

This table shows that 38.7% of the patients had abnormal mammogram and 61.3% had normal mammogram. **Abnormal mammogram:** shows rod-shaped calcification 20% ductal ectasia, eggshell calcification 10% and focal asymmetry, nodules 8.7% (Table 6).

This table shows that according to cytology, 8% were carcinoma, while 60% of the patients were benign and there were 32% of the patients were inconclusive results (Table 7).

This table shows that the majority finding among malignant lesions was DCIS (4%) while the major benign lesion was ductal ectasia (20%) (Table 8).

This table shows that there is a substantial variation regarding single duct discharge.

Table 4. Discharge characteristics distribution among the studied patients.

	All patients (n = 150) N (%)
Spontaneous discharge	133 (88.7%)
Single duct discharge	55 (36.7%)
Persistent discharge	51 (34%)
Active discharge at presentation	46 (30.7%)

Table 5. Mammographic findings among the studied patients.

	All patients (n = 150) N (%)
Normal mammogram	92 (61.3%)
Abnormal mammogram	58 (38.7%)

Table 6. Cytology findings among the studied patients.

	All patients (n = 150) N (%)
Breast carcinoma	12 (8)
Benign lesions	90 (60)
Inconclusive	48 (32)

Table 7. Histopathological findings among the studied patients.

	All patients (n = 150) N (%)
Malignant lesions	12 (8%)
Ductal carcinoma in situ	6 (4%)
Invasive lobular carcinoma	2 (1.3%)
Infiltrating ductal carcinoma	4 (2.7%)
Benign lesions	90 (605
Abscess	13 (8.7%)
Fat necrosis	5 (3.3%)
Fibrocystic changes	18 (12%)
Fibro adenoma	9 (6%)
Papilloma	15 (10%)
Ductal ectasia	30 (20%)
Others	48 (32%)

Table 8. Comparison between benign and malignant lesions among the studied patients.

	Benign (n = 138) N (%)	Malignant (n = 12) N (%)
Age		
20–30 years	5 (3.6%)	0 (–)
30–40 years	16 (11.6%)	1 (8.3%)
40–50 years	68 (49.3%)	2 (16.7%)
>50 years	49 (35.5%)	9 (75%)
Laterality		
Unilateral	103 (74.6%)	8 (66.7%)
Bilateral	35 (25.4%)	4 (33.3%)
Discharge		
Spontaneous discharge	124 (89.9%)	9 (75%)
Persistent discharge	46 (33.3%)	5 (41.7%)
Active discharge at presentation	39 (28.3%)	7 (58.3%)

4. Discussion

One of the most frequent concerns in breast clinics is nipple discharge, which has lately become more prevalent.[7]

On the other hand, benign pathologies including papilloma and duct ectasia are the most prevalent secondary causes of pathological nipple discharge (PND), yet the danger of malignancy should not be disregarded.[8]

Most importantly, malignancy must be ruled out as a cause of PND. The first step in the diagnostic process is a clinical examination that looks at the start, frequency, amount, and color of nipple discharge in addition to the patient's medical history to rule out psychological explanations.[8]

Regarding demographic distribution of the studied patients, age of the study population ranged from 24 to 58 years with mean 43.52 ± 8.72 years with mean BMI was 25.75 kg/m2 and (55.3%) of them were rural.

In agreement with the present study the meta-analysis by **Jiwa** et al.,[9] enrolled 45 studies and reported that with an age range of 14—94 years, the mean or average age was given for 30 of the 45 studies. The average age of the patients that were included was 48.74 ± 4.66 years.

Also, the study by **Wong** et al.,[10] included a total of 184 patients with Nipple Discharge (average age 53 years, range 19—84).

The present study showed that 74% of the patients had unilateral discharge and 26% of the patients had bilateral discharge.

As regard Discharge color distribution among the studied patients, the present study showed that 56% of the patients had a clear or serous discharge, 24% of the patients had milky discharge, and 20% of the patients had green discharge.

One of the most obvious aspects for both patients and surgeons is the color of the nipple discharge.

A Systematic Review of the Literature Based on a Meta-analysis by **Jiwa** et al.,[9] concluded that despite having a high positive malignant rate, the color of nipple discharge fluid had limited prognostic value.

The present study showed that the most prevalent related symptoms were mastalgia (30%) followed by nipple inversion (16%) then generalized lumpiness (7.3%).

However, **Li** et al.,[11] reported that Breast soreness or discomfort (16%) and a noticeable breast mass (15%) were the most prevalent related symptoms.

As regard discharge characteristics distribution among the studied patients, the present study showed that there were 88.7% of the patients had spontaneous discharge, 36.7% had single duct discharge, and 34% had persistent discharge while 30.7% had active discharge at presentation.

The present study was supported by **Li** et al.,[11] who revealed that the most prevalent characteristics of patients with nipple discharge were Spontaneous nipple discharge then Single duct involvement followed by Persistent nipple discharge.

The current study showed that there was 38.7% of the patients had abnormal mammogram and 61.3% had normal mammogram.

In agreement with the present study **Li** et al.,[11] reported that 34.2% of the patients had abnormal mammogram and 65.8% had normal mammogram.

According to cytology the present study showed that 8% had carcinoma, while 56.7% of the patients were benign and there were 35.3% of the patients were inconclusive results.

The Meta-analysis and Systematic Review of the Literature by **Jiwa** et al.,[9] concluded that Data from the included investigations were combined to show that nipple discharge cytology had low sensitivity for symptomatic women and limited diagnostic accuracy.

Also, **Kooistra** et al.,[12] revealed that Nipple discharge cytology doesn't provide many further diagnostic benefits. Sensitivity and specificity were respectively 16.7% and 66.1%.

It is challenging to draw any firm conclusions on the potential usefulness of this exam. However, the claimed sensitivity for malignancy is variable, ranging from 17% to 85%, and cytology appears to only be reliably predictive of malignancy when paired with radiologic and clinical variables. Other organizations include nipple cytology in their usual diagnostic assessment of PND.[9]

Regarding Histopathological findings among the studied patients, we found that the majority finding among malignant lesions was DCIS (4%), while the major benign lesion was ductal ectasia (20%).

In line with our findings, the research by **Fakhry** et al.,[13] revealed that Among the 140 instances, 81/140 (57.9%) were malignant, whereas 59/140 (42.1%) were benign. The most prevalent pathology, discovered in 30/140 cases (21.4%), was papilloma, whereas the most common malignant pathology, detected in 24 instances (17.1%), was DCIS.

Li et al.,[11] 49 (18%) instances of cancer were detected, of which 15 (31%) were ductal carcinoma in situ and 33 (67%) were invasive (DCIS). 15% of the invasive carcinomas were HER2-positive, 15% HER2-negative, and 70% of them were estrogen receptor-positive and HER2-negative.

Also, **Montroni** et al.,[14] revealed that the most frequent malignant lesion was DCIS (52%).

Comparison between benign and malignant lesions among the studied patients, showed that there was substantial variation regarding single duct discharge and Active discharge at presentation, but there was no substantial variation as regard age,

laterality, Spontaneous discharge and Persistent discharge.

However, **Li** et al.,[11] reported that there was substantial variation as regard age, associated/palpable mass, and Mammogram findings, the disagreement as regard age may be due to the differences in sample inclusion criteria, but there was no substantial variation regarding laterality, single duct discharge, Spontaneous discharge and Persistent discharge.

In agreement with our results **Park** et al.,[15] reported that in individuals with nipple discharge, there was no substantial variation in age or the Ultrasonographic findings between benign and malignant breast tumors.

4.1. Conclusion

Among the many colors of nipple discharge, bloody nipple discharge may be a marker of breast cancer risk. The preoperative classification of patients is helped by the symptom of bloody nipple discharge. Non-Bloody Breast Discharge was a risk factor of breast cancer affecting women in our cohort.

Authorship

All authors have a substantial contribution to the article.

Disclosure

The authors have no financial interest to declare in relation to the content of this article.

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Conflicts of interest

The authors declared that there were NO conflicts of Interest.

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