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Breast Cancer Screening and Chemoprevention

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Abstract

Breast cancer is the most commonly diagnosed cancer in women and the second leading cause of cancer related death among women in the United States. Breast cancer chemoprevention is a proven way to reduce breast cancer incidence. This article will present a short literature review and an assessment and description of breast cancer screening and chemoprevention in an outpatient internal medicine clinic. Records were reviewed to provide description of the screening in an outpatient internal medicine clinic. A secondary analysis was then performed to determine if age, race or breast cancer history affected screening or if chemoprevention was appropriately offered. The median age of initial breast cancer screening was 57.9 ± 10.23. There was a non-significant difference in age between women who received screening mammography and women who did not. The Gail Risk Model was not used to define high risk patients and no women have received chemoprevention. Utilization of The Gail Risk Score by nursing or medical staff and integration of the tool into electronic medical records may be useful in the future to aid in identification of high risk women.

Keywords

Breast cancer, Chemoprevention, Screening, Mammography

Introduction

Breast cancer is one of the most commonly diagnosed cancers in women and the leading cause of cancer related death among women in the United States. In 2012, there were an estimated 2,975,314 women living with breast cancer in the United States [1].

Screening

Currently there are three major organizations that provide breast cancer screening recommendations. Recommended screening modalities include self-breast examination, clinical breast examination, mammogram and for high risk patients breast MRI. While recommendations on when and how to screen differ based on the recommending organization, all agree that early detection and intervention are key to survival.

Risk factors and risk assessment-The Gail model

The majority of newly diagnosed breast cancer cases can be linked to certain variables which are associated with increased risk. These risk factors can be divided into modifiable, non-modifiable and potentially modifiable. Non-modifiable factors include patient age and age at menarche. Modifiable and potentially modifiable factors include diet, BMI, alcohol consumption, physical activity, breast density, nulliparity or age of first live birth. Lifestyle changes to reduce modifiable risk factors are a potentially important methods of reducing invasive breast cancer occurrence.

The Gail model or Breast Cancer Risk Assessment Tool is the most widely used method of risk factor assessment [2]. It allows a calculation of a woman's individual risk of developing breast cancer over a lifetime up to the age of 90. The tool calculates risk based on the women's current age, age at menarche, age at first live birth of a child, number of first degree relatives with breast cancer, number of previous breast biopsies and whether any biopsy has shown atypical hyperplasia. Women with a 5 year breast cancer risk above 1.67% (the risk associated with average 60-year-old women) are approved for chemoprevention.

Chemoprevention

Chemoprevention is the use of substances (synthetic or biological) to reverse, suppress, or prevent the development of cancer. Three fundamental trials laid the path for chemoprevention of invasive breast cancer. In 1998 the National Surgical Adjuvant Breast and Bowel Project P-1 Study gave support for tamoxifen use in the preventative setting [3]. Tamoxifen treatment produced a 49% reduction in risk of invasive breast cancer among women age 35 to 59 with elevated risk based on the Gail model. In 2001 Dickler et al. published the MORE trial, a multicenter, randomized, placebo-controlled trial designed to determine whether 3 years of raloxifene reduces the risk of fracture in postmenopausal women with osteoporosis. As a secondary end point of the trial, raloxifene was shown to reduce the risk of both in situ and invasive breast cancer by 65% in post menopausal women [4]. With NSABP and MORE showing breast cancer reduction, the STAR trial gave head to head comparison of the preventative effects of raloxifene vs. tamoxifen. The STAR trial supported raloxifene as equally effective as tamoxifen in post-menopausal women in reducing the risk of invasive breast cancer with a lower risk of adverse events [5]. Recently Freedman et al evaluated the use of chemoprevention in the U.S. and concluded that a substantial percentage of U.S. women would be eligible for tamoxifen chemoprevention and more than two million women would have a net benefit from chemoprevention [6,7].

This detailed chart review will present an assessment and description of breast cancer screening and chemoprevention in women over 35 years of age seen in an outpatient internal medicine clinic in 2014.

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Table 1: Patient demographics.

Characteristic	
Total Population Number	*n* = 69
Median Age	56.98 SD 11.68
White	49 (71%)
Hispanic	6 (8.7%)
African American	5 (7.2%)
Asian	4 (5.8%)
Alaskan/American Indian	0 (0%)
Not specified	5 (7.2%)

Table 2: Screening characteristics.

Characteristics of Screening	
Average Age of First Mammogram	57.9 ±10.23
Patients with ≥ 1 Mammogram	53 (76.8%)
Mammograms per patient	
0	16 (23.2%)
1	16 (23.2%)
2	9 (13%)
3	15 (21.7%)
4	6 (8.7%)
5	7 (10.1%)
Number of women with Documented Birth	20 (29%)
Average Birth Age of first birth	23.59 ± 6.69
Family History Positive for BC	13 (18.8%)
Menarche Documented	4 (5.7%)
Number with Biopsy	6 (8.7%)

Methods Used

An IRB approved retrospective study without direct patient contact was completed on patients established in an outpatient internal medicine continuity clinic who were female ≥ 35 and coded for an Annual Visit. Established patients were defined as patients seen in the TTUIM clinic for three or more visits. 84 charts were reviewed, 15 did not meet inclusion criteria. Patient charts were reviewed to determine if women are appropriately screened for breast cancer based on current guidelines. A secondary analysis was then performed to determine if age, race or breast cancer history affected screening and if chemoprevention was appropriately offered.

Results

69 female patients were seen in internal medicine clinic at least 3 times in 2014 and billed as "Annual Visit." Demographics (Table 1). The median age of initial mammography was 57.9 ± 10.23 (Table 2). There was a non-significant difference in age between women who received screening mammography and women who did not. Personal history of breast cancer increased a woman's likelihood of additional screening. Based on chart review alone there were insufficient data to calculate breast cancer risk (i.e., Gail Risk Score) and Gail score was calculated by the physician in only 1 case. Chemoprevention was not given to any women. Menarche was documented in 4 patients (5.7%).

Discussion

Breast cancer screening with mammography plays an important role in women's health. The majority of patient's seen in internal medicine clinic are appropriately screened using mammography. While breast cancer remains a leading cause of death among American women, mammography and screening measures do not decrease the incidence of breast cancer. Chemoprevention is one method in which mortality can be decreased through decrease of incidence. This review illustrates the importance of risk stratification screening tools. While the data indicate that mammography is offered appropriately and the large majority of women comply with recommendations of screening there were no women offered chemoprevention therapy. Through simple chart review it is not possible to assess how many women would be considered high risk for breast cancer. Utilization of a simple risk assessment screening tool could increase the number of women offered chemoprevention and possibly decrease mortality and morbidity from breast cancer.

This study has several limitations. The population size is small, in a single center and may not reflect women who are routinely seen but fail to have an "Annual Visit" coded. The study is limited to an internal medicine clinic. Other general practice settings need to be included to better describe breast cancer screening and risk stratification. The study is limited to review of electronic health records. Many patients receive screening at outside facilities thus the EHR may not accurately reflect a patient's health profile.

Conclusions

Breast cancer screening is recommended for any women over age 50. In many outpatient internal medicine clinics The Gail Risk Model is not currently used to define high risk patients. No women received chemoprevention therapy in this clinic in 2014. Simple integration of the Gail Model into the medical record system would allow for physicians to identify high risk patients. Utilization of The Gail Risk Score by nursing or medical staff may increase the number of women offered chemoprevention and in turn decrease morbidity and mortality from breast cancer. Further review of other outpatient clinics is needed.

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Payne et al. Int J Cancer Clin Res 2016, 3:056

ISSN: 2378-3419 • Page 2 of 2 •