Relationship between risk factors and tumor stage in breast cancer patients in a university hospital - Brazil

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Summary

Purpose: To verify the relationship between clinical variables and tumor stage in breast cancer. *Methods*: This retrospective study (1998 to 2001) analyzed data of 176 women with breast cancer attending a university hospital. Patients were divided into groups according to the clinicopathological variables studied. *Results:* The disease had a similar frequency at age under 50 years (44.3%) or above (55.7%) 50 years. Stage II was more frequent. Most patients were white (69.9%), non-smokers (69.3%) and were not using oral contraceptives (71%). Stages 0-II were mainly detected in the white (74.8%) vs non-white (60.4%) group. Monthly breast self-exams were performed by 62.5% of women, in which earlier stages (0, I) were more frequently detected than in those who did not perform self-exams (27.3% vs 12.1%, p = 0.01). *Conclusion:* Breast cancer occurred mainly in white women in Stage II, and with similar frequency at age under or over 50 years. Breast self-exam was associated with early detection of the disease.

Key words: Breast cancer; Tumor stage; Risk factors; Breast self-exam.

Introduction

Breast cancer represents the first cause of death by cancer among women and is considered an important public health problem worldwide [1]. The interaction of genetic factors with lifestyle, reproductive habits, and environment are involved in the development of the disease [2]. Epidemiological studies indicate that environmental factors account for 80% cases of breast cancer, while genetic factors correspond to 5%, increasing to 25% when disease is detected in women under 35 years of age [3, 4]. Age exerts a strong influence on predisposition to breast cancer. It is more frequent in women from 45 to 65 years old, while at ages under 35 years epidemiological data are controversial [5, 6].

One important problem in breast cancer diagnosis is the failure to detect tumor at initial stages [7]. In Brazil, it was reported that 60% cases are detected at advanced stages, having as consequence increased relapses, risk of metastasis and reduced survival [8]. Breast self-examination is considered an important strategy for detection of breast tumors at earlier stages [9], although this procedure was not found to alter the mortality rate [10].

The study was carried out in a university hospital with the aim of examining the relationship between tumor stage and diverse variables considered as risk factors, such as age, race, oral contraceptive use, smoking, and performing breast self-exams in women with breast cancer.

Patients and Methods

A retrospective study was conducted with data collected from the medical records of 176 breast cancer patients attending the mastology outpatient service of a public tertiary reference university hospital in Brazil for patients with a low socioeconomic level. All patients with anatomopathologic diagnoses of breast cancer from 1998 to 2001 were enrolled.

Patients were further analyzed in groups according to the following characteristics upon diagnosis: age (< 40, 40-50, > 50), race (white, non-white), smoking status (yes, no), oral contraceptive use (yes, no), monthly breast self-examination (yes, no) and tumor stage (0, I, II, III, IV, according to Beahrs [11]).

Statistical analysis was performed by *GraphPad InStat* software. Data were compared by the chi-square and Fisher exact test and significance level was established at $p < 0.05$.

Results

Patients enrolled (n = 176) had a mean age (± SD) of 53.7 ± 11.9 years (range 23-80 years). The diagnosis of breast cancer was more frequent in white women, non-smokers and in those who were not using oral contraceptive at diagnosis (Table 1). Stage II was the most frequently detected, comprising around half the patients (Table 1).

General and clinical features of the patients were determined on the basis of tumor stage and classified in three groups: 0/I, II and III/IV to ascertain any possible relationship between these variables (Table 2). Considering the age intervals, Stage II was the most frequently found in all groups but without any statistical differences (Table 2). Also, no differences were detected when considering age (± SD) at diagnosis for white (53.2 ± 12.7) and non-white (54.9 ± 9.9) women. Stage II was also the most frequent in both white and non-white women (Table 2). Nevertheless, if considering Stages 0, I and II altogether a higher incidence was detected in white women (74.8%) compared to non-white (60.4%) ($p < 0.05$, Fisher's exact test). Considering smoking and oral contraceptive use, again Stage II was mainly detected, without statistical differences among groups.

Among the enrolled women, the majority (62.5%) performed monthly breast self-exams (Table 1). Breast

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Table 1. — *Clinicopathological characteristics of 176 women with a first diagnosis of breast cancer in a university outpatient service*.

Variables	No. (%)
Age at diagnosis	
< 40	20 (11.3)
40-50	58 (33.0)
> 50	98 (55.7)
Race	
white	123 (69.9)
non-white	53 (30.1)
Smoking	
yes	54 (30.7)
no	122 (69.3)
Oral contraceptive use	
yes	51 (29.0)
no	125 (71.0)
Breast self-exam	
yes	110 (62.5)
no	66 (37.5)
Tumor stage	
0/I	38 (21.6)
II	86 (48.9)
III/IV	52 (29.5)

Table 2. — *Distribution of general and clinical features of 176 breast cancer patients according to tumor stage*.

Variables	Tumor stage					
	0/I (n = 38)		II (n = 86)		III/IV (n = 52)	
	No.	%	No.	%	No.	%
Age at diagnosis						
< 40 (n = 20)	4	10.5 (20.0)	12	14 (60.0)	4	7.7 (20.0)
40-50 (n = 58)	12	31.6 (20.7)	31	36 (53.4)	15	28.8 (25.9)
> 50 (n = 98)	22	57.9 (22.4)	43	50 (43.9)	33	63.5 (33.7)
Race						
White (n = 123)	30	78.9 (24.4)	62	72.1 (50.4)	31	59.6 (25.2)
Non-white (n = 53)	8	21.1 (15.1)	24	27.9 (45.3)	21	40.4 (39.6)
Smoking status						
Yes (n = 54)	11	28.9 (20.4)	31	36 (57.4)	12	23.1 (22.1)
No (n = 122)	27	71.1 (22.1)	55	64 (45.1)	40	76.9 (32.8)
Oral contraceptive use						
Yes (n = 51)	9	23.7 (17.6)	24	27.9 (47.1)	18	34.6 (35.3)
No (n = 125)	29	76.3 (23.2)	62	72.1 (49.6)	34	65.4 (27.2)
Breast self-exam						
Yes (n = 110)	30*	78.9 (27.3)	48	55.8 (43.6)	32	61.5 (29.1)
No (n = 66)	8	21.1 (12.1)	38	44.2 (57.6)	20	38.5 (30.3)

*$p < 0.05$ compared with patients at Stage 0/I who did not perform breast self-exams (Fisher exact test). Percentages in parenthesis refer to tumor stage.

cancer was mainly detected at Stage II in both groups but advanced stages (III, IV) were also found with fairly high frequency (Table 2). However, patients performing the breast self-exam had earlier detected stages (0, I); 27.3% more frequently detected than women who did not (12.1%, $p = 0.01$), (Table 2). Nevertheless, the complaint of a "tumor finding" was reported with similar frequency by patients who did or did not perform (60.9% vs 69.7%, respectively) breast self-exams.

Discussion

In our population study most cases of breast cancer occurred in white women, as reported in the United States, Europe and Korea [12]. However, the mortality rate was found to be higher among black women in the United States, independent of age and mainly due to diagnosis at advanced stages [13]. It is possible that differences in response to treatment or access to newer medical interventions might largely account for these trends [14]. Although not reaching statistical significance, our study showed that Stages III/IV were more frequent in non-white compared to white women (Table 2).

Epidemiological studies have demonstrated that breast cancer is increasingly affecting younger women. In 1990, up to 50% cases of breast cancer in the United States comprised women over 65 years [14], while in 1997 the disease had an increased incidence and mortality in women under 55 years [15]. Our results showed that 44% of breast cancer cases comprised women < 50 years and, from these, 11% of cases were < 40 years (Table 1). These findings suggest that mammography should be indicated as a routine exam for women under 40 years of age. In Lebanon, 49% of breast cancer cases were detected in patients < 50 years, with 4.7% being cases < 30 years of age [16]. In Nigeria, patients affected had a mean age of 42.7 years and in 40% of cases of infiltrating disease women were < 40 years old [17]. Age under 40 at diagnosis could be considered an independent poor prognostic factor since the 10-year survival for breast cancer was found to be significantly lower compared to middle-aged women (40-69 years) [18]. Although the influence of cultural environmental and socio-economic factors in each population could not be ruled out, the hypothesis that breast cancer occurs more frequently in industrialized countries or urbanized regions in response to lifestyle should be reevaluated.

Oral contraceptive use was reported to be associated with a small increase in breast cancer risk [19]. Norwegian-Swedish women under oral contraceptive use for a long time were at greater risk for the development of breast cancer than those that had never used such drugs [20]. Most cases from our study were not using oral contraceptives when diagnosed, in line with studies that did not find oral contraceptive use as a risk factor for breast cancer [21]. A large prospective cohort study enrolling women with a familal history of breast cancer found that long duration of oral contraceptives was inversely associated with breast cancer risk [22]. In addition, the use of low-dose oral contraceptives did not increase the risk of early-onset breast cancer for mutation carriers [23].

An overview of studies evaluating the relationship between smoking and breast cancer has shown a neutral effect on the incidence of the disease [24]. However considering prognosis, a cohort study showed that smokers had a higher mortality from breast cancer [25]. In our study, most patients were non-smokers at time of diagnoses, but some could have been ex-smokers since our data did not differentiate between these features. It was already reported that women who start smoking as teenagers and continue to smoke for at least 20 years may increase their breast cancer risk [26].

Mortality rates for breast cancer are high throughout the world, probably because of diagnoses at advanced stages [27]. Our results demonstrated that breast cancer

affected women under and over 50 years old with similar frequency, without any significant differences in tumor stage between these groups. Although Stage II accounted for around half the cases in all variables studied, at least one-fifth of cases were diagnosed at Stages III/IV. If we consider that women over 40 years of age should be routinely submitted to mammography, a relatively high number of cases detected at advanced stages would suggest that public health programs have failed to recruit women for detection of early alterations suggestive of breast cancer and annual exams should be considered.

In Brazil, the breast self-exam represents an important national strategy in the detection of breast cancer but it is uncertain as to whether breast self-exam has any effectiveness at all in reducing breast cancer morbidity and mortality. It was reported that even a high level of compliance with breast self-exams may not lead to any appreciable degree of early detection of cancer and, therefore, no appreciable degree in the reduction of mortality [28, 29]. In our study, earlier stages were significantly more frequent in patients who performed breast self-exams. Nevertheless, independent of performing breast self-exams, a "tumor finding" was the main complaint at the consultation reported by the majority of patients. It is possible that the observed association between breast self-exam compliance and breast cancer diagnosis at earlier stages better reflects that women from this group are more worried about disease and, as consequence, have undergone regular clinical breast exams and mammography.

Conclusions

Breast cancer was mainly diagnosed in white women, at Stage II, and with similar frequency at ages under or over 50 years old. A relationship between age and tumor stage was not observed but an association was found between breast self-exams and early detection of disease.

Acknowledgements

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