Determinants of advanced staging in 117,601 Brazilian women with breast cancer

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INTRODUCTION

Breast cancer is the most commonly diagnosed cancer among Brazilian women, after non-melanoma skin cancer, being the leading cause of death by cancer among this group. A total of 52,680 new cases are estimated for the year 2013, with an estimated risk of 52 cases per 100,000 women (BRASIL, 2012). The clinical staging of disease is the most important element for planning of therapeutic behaviors and consequent stratification of prognosis (LEE, 2012).

In the national context, breast cancer has been diagnosed at advanced stage (≥ III) in about 45% of cases, demonstrating the need for public health policies to reduce the delay in diagnosis and improve early detection (THULER; MENDONÇA, 2005; WANG, 2008; BALABRAM, 2012)

OBJECTIVE

To analyze the determinants of advanced staging in Brazilian women with breast cancer.

MATERIAL AND METHODS

We conducted a cross-sectional study using data from the Cancer Hospital Records in Brazil. The study included women diagnosed with breast cancer (Classification of Malignant Tumors – MT – C50) in the period 2000–2009, who were subject to planning and carrying out of treatment at the same institution (analytic cases); women younger than 18 years were excluded from the study.

The clinical staging of disease at diagnosis, defined by the Classification of Malignant Tumors (TNM), was considered as outcome, and patients were grouped into two categories: early (≤IIA) and advanced (≥IIB) stage.

We analyzed the following independent variables: age group, race, histology type, educational level, marital status, smoking and alcohol consumption, region of residence and year of diagnosis.

For data analysis we used the SPSS statistical software (Statistical Package for the Social Sciences) version 17.0. The analysis was performed using central tendency and dispersion measures for continuous variables, and determination of the frequency distribution for categorical variables. The association between independent variables and the outcome was assessed by bivariate analysis using odds ratio (OR), assuming intervals of 95% confidence (95%CI). The data that were considered clinically and statistically significant ($p < 0.05$) in the bivariate analysis were included in a logistic regression analysis using the Enter method to eliminate possible confounding factors. The final model included the variables with clinical and/or statistical significance.

This study was approved by the Ethics Committee in Research of the National Cancer Institute José de Alencar Gomes da Silva, according to Resolution 196/96 under number CAAE - 0104.0.007.000-11.

RESULTS

In the period from 2000 to 2009, 117,601 eligible women were diagnosed with breast cancer. The average age was 55.54 years (SD 13.46), with the largest number of cases in the age group 45–49 years (Figure 1).

There was a gradual reduction in the rate of diagnosis of breast cancer at an advanced stage during the analyzed period (2000–2009), with a frequency of 59.4% in 2000 and 51.2% in 2009 (Figure 2); the coefficient of determination (85.3%) indicated a good adjustment model.

Table 1 shows the frequency distribution between socio-demographic and pathological characteristics according to staging, bivariate analysis and multivariate logistic regression.

CONCLUSION

Among the women included in the study, 52.9% were classified as having advanced stage breast cancer (≥IIB) at diagnosis. Young age, lack of a partner, black race, low education, smoking, living in the poorest regions, histopathological diagnosis of invasive ductal carcinoma and having been diagnosed in the first half of the study period (2000–2004) were considered factors associated with an advanced stage of breast cancer among Brazilian women.

Fig 1 Distribution of breast cancer by age at diagnosis in Brazil, 2000–2009

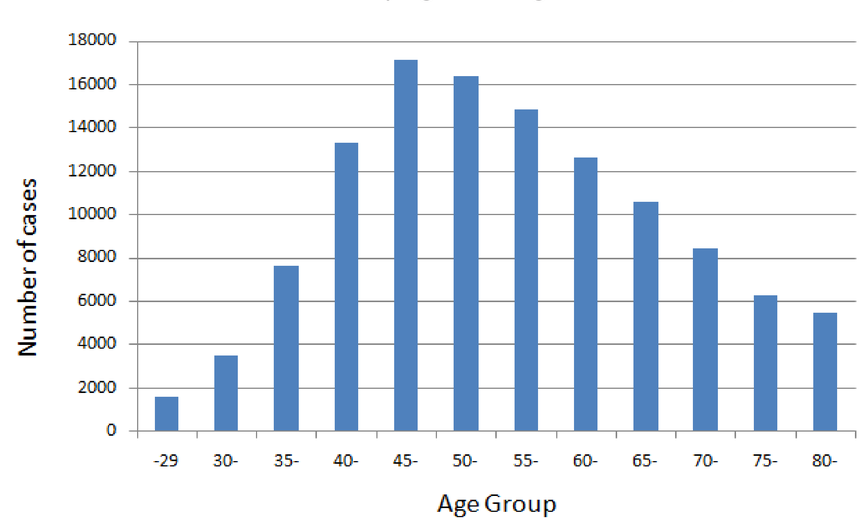

Fig 2 Percentage of advanced staging and year of diagnosis, 2000–2009

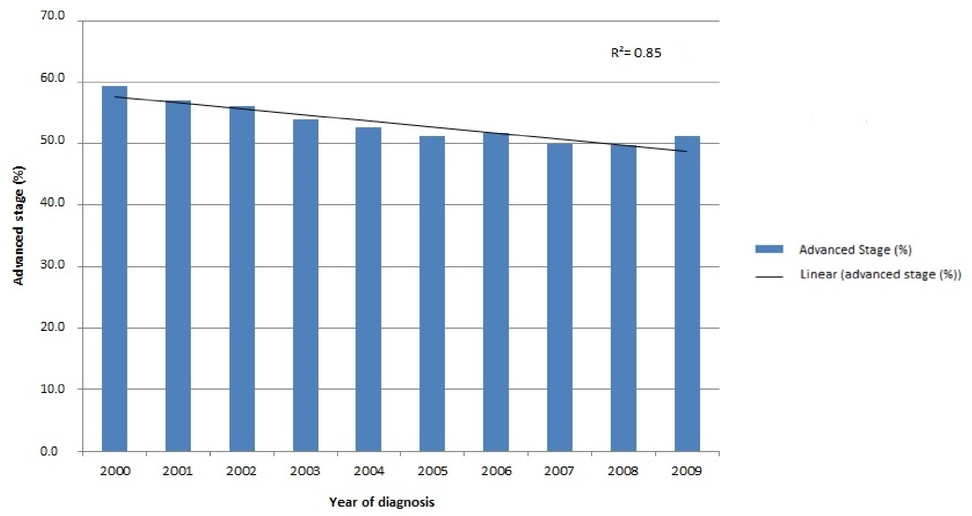

Table 1 Multivariate logistic regression of factors associated with breast cancer diagnosed at advanced stage

Characteristics	Advanced Stage N=46557 (52.9%)	Early Stage N=41412 (47.1%)	OR	95%CI	p-value
Age group (years)					
≥ 70	8072 (17.3)	7114 (17.2)	Reference		
50–69	20606 (44.3)	20292 (49.0)	1.039	0.954-1.133	0.379
40–49	12034 (25.8)	10543 (25.5)	1.144	1.039-1.261	0.006
18–39	5845 (12.6)	3463 (8.4)	1.694	1.501-1.912	<0.001
With partner					
Yes	10492 (51.7)	8757 (56.5)	Reference		
No	9814 (48.3)	6738 (43.5)	1.229	1.156-1.306	<0.001
Race/skin color					
Other	18237 (90.2)	14843 (94.2)	Reference		
Black	1987 (9.8)	920 (5.8)	1.679	1.513-1.864	<0.001
Educational level (years)					
≥ 8	13989 (44.1)	14840 (53.8)	Reference		
≤ 7	17729 (55.9)	12759 (46.2)	1.398	1.315-1.487	<0.001
Smoking					
No	10824 (96.3)	8166 (71.7)	Reference		
Yes	4801 (30.7)	3222 (28.3)	1.125	1.053-1.201	<0.001
Region of residence					
South and Southeast	39419 (84.8)	36658 (88.6)	Reference		
North, Northeast and Midwest	7060 (15.2)	4694 (11.4)	1.147	1.063-1.238	<0.001
Histological type					
Other	3481 (7.9)	6391 (16.7)	Reference		
Invasive ductal carcinoma	40502 (92.1)	31937 (83.3)	1.672	1.544-1.810	<0.001
Year of diagnosis					
2005–2009	24092 (52.0)	23368 (53.7)	Reference		
2000–2004	22280 (48.0)	17880 (43.3)	1.277	1.203 1.356	<0.001

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