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Prevalence of Breast Carcinoma In Situ in the United States

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To the Editor:

Breast carcinoma *in situ* (BCIS) comprises 20% of new breast cancer diagnoses, with two predominant histologic forms: ductal (DCIS) and lobular (LCIS).¹ Women with DCIS often undergo treatment similar to that of women with localized invasive cancer and experience similar reductions in quality of life.² Women diagnosed with either DCIS or LCIS are approximately 4 times more likely to develop invasive breast cancer compared to the general population.³ The Surveillance, Epidemiology, and End Results (SEER) Program of the National Cancer Institute reports that there were 2.5 million survivors of invasive breast cancer alive in the United States in 2005,¹ but we are aware of no published estimates of BCIS prevalence.

Methods

The prevalence of BCIS on January 1, 2005 was estimated by applying age- and race-specific prevalence proportions from the SEER 9 registries to the US population.⁴ Individual SEER registries determined and reported race classifications. The counting method was used to estimate first primary prevalence from SEER data.⁵ This method counts the number of persons known to be alive and adjusts for those lost to follow-up using conditional survival curves by age, race, year of diagnosis, and tumor histology. January 1, 2005 population estimates were calculated based on the average of 2004 and 2005 estimates from the US Census. SEER race- and age-specific limited-duration prevalence data were projected to the US population using ProjPrev (Version 1.0.1, National Cancer Institute, October 2005). Prevalence comparisons were made using tests of proportions with 2-sided alpha of .05. Because the SEER registries were fully established in 1975, only 30-year limited-duration prevalence was available.

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Study concept and design: Sprague, Trentham-Dietz

Acquisition of the data: Sprague

Analysis and interpretation of data: Sprague, Trentham-Dietz

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Complete prevalence was estimated from 30-year limited-duration prevalence using the completeness index method⁶ with CompPrev software (Version 1.0.0, National Cancer Institute, August 2005). Ten-year limited-duration prevalence was also estimated for 1985, 1995, and 2005.

Results

On January 1, 2005, an estimated 610,171 US women were alive who had been diagnosed with BCIS within the past 30 years (Table). DCIS survivors outnumbered LCIS survivors more than 5-fold. Approximately half of all BCIS survivors (52.3%) were between 55 and 74 years old. Prevalence was greatest among whites (4.4 per 1,000) compared to blacks (2.5 per 1,000; $p<0.001$) or other race/ethnicity (2.4 per 1,000; $p<0.001$).

An estimated 21,654 BCIS survivors were alive who had been diagnosed prior to 1975, yielding a complete BCIS prevalence of 631825 (4.2 per 1,000; 95% confidence interval [CI], 626698–636952). Ten year limited-duration prevalence quadrupled from 0.4 per 1,000 (50192; 95% CI, 48709–51675) in 1985 to 1.5 per 1,000 (205161; 95% CI, 202167–208154; $p<0.001$) in 1995, then approximately doubled by 2005 to 2.8 per 1,000 (422426; 95% CI, 418143–426710; $p<0.001$). Assuming constant incidence and survival rates, the estimated prevalence of BCIS will exceed 1 million cases by 2016.

Comment

The validity of this estimate relies on the representativeness of incidence and survival rates in the SEER registries for the US as a whole. While the SEER 9 registries are geographically diverse and cover approximately 10% of the US population,¹ prevalence patterns may differ in areas not covered by SEER.

The estimate of complete prevalence differed little from the 30-year limited duration prevalence. BCIS comprised only 4% of all breast cancer diagnoses prior to 1990,¹ and is more common in older women. Thus the contribution of patients diagnosed prior to 1975 who were still alive in 2005 is small.

Current epidemiologic evidence regarding predictors of subsequent invasive breast cancer after BCIS is limited. Guidelines are necessary to help the increasing number of BCIS survivors choose the best treatment and lifestyle strategies while still maintaining high quality of life.

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Table 1

Estimated 30-year limited-duration prevalence of breast carcinoma *in situ* among U.S. women, January 1, 2005.

Characteristic	BCIS ^a		DCIS		LCIS	
	Frequency (95% CI) [%]	Prevalence, per 1000 women	Frequency (95% CI) [%]	Prevalence, per 1000 women	Frequency (95% CI) [%]	Prevalence, per 1000 women
Total survivors	610,171 (605,013 – 615,330) [100.0]	4.1	484,207 (479,611 – 488,803) [100.0]	3.2	87,453 (85,481 – 89,425) [100.0]	0.6
Age at Prevalence Date, y						
<25	53 (5 – 101) [<0.1]	<0.01	53 (5 – 101) [<0.1]	<0.1	0 (–) [0.0]	0.0
25–34	1,242 (1,015 – 1,469) [0.2]	0.1	1,131 (914 – 1,348) [0.2]	0.1	73 (18 – 128) [0.1]	<0.1
35–44	22,508 (21,547 – 23,469) [3.7]	1.0	18,686 (17,812 – 19,561) [3.9]	0.9	2,660 (2,327 – 2,993) [3.0]	0.1
45–54	106,997 (104,907 – 109,087) [17.5]	5.0	83,315 (81,472 – 85,157) [17.2]	3.9	17,202 (16,355 – 18,048) [19.7]	0.8
55–64	170,019 (167,334 – 172,704) [27.9]	11.0	130,330 (127,980 – 132,680) [26.9]	8.5	29,387 (28,258 – 30,516) [33.6]	1.9
65–74	149,394 (146,767 – 152,021) [24.5]	14.8	117,204 (114,877 – 119,531) [24.2]	11.6	22,796 (21,756 – 23,835) [26.1]	2.3
75–84	120,352 (118,020 – 122,685) [19.7]	15.5	99,831 (97,705 – 101,957) [20.6]	12.9	12,386 (11,628 – 13,144) [14.2]	1.6
≥85	39,606 (38,297 – 40,915) [6.5]	11.6	33,656 (32,449 – 34,863) [7.0]	9.9	2,950 (2,590 – 3,309) [3.4]	0.9
Race/ethnicity ^b						
White	534,043 (529,170 – 538,916) [87.5]	4.4	421,350 (417,016 – 425,684) [87.0]	3.5	79,442 (77,555 – 81,329) [90.8]	0.7
Black	50,773 (49,254 – 52,291) [8.3]	2.5	41,402 (40,029 – 42,775) [8.6]	2.0	5,719 (5,213 – 6,225) [6.5]	0.3
Other ^c	20,918 (20,308 – 21,528) [3.4]	2.4	18,559 (17,984 – 19,134) [3.8]	2.1	1,129 (984 – 1,273) [1.3]	0.1
Time Since Diagnosis, y						
≤5	239,423 (236,200 – 242,645) [39.2]	1.6	197,814 (194,884 – 200,744) [40.9]	1.3	27,042 (25,957 – 28,126) [30.9]	0.2
6–10	177,946 (175,151 – 180,741) [29.2]	1.2	145,178 (142,654 – 147,703) [30.0]	1.0	21,550 (20,576 – 22,524) [24.6]	0.1
11–15	102,813 (100,675 – 104,951) [16.8]	0.7	79,678 (77,797 – 81,559) [16.5]	0.5	16,331 (15,474 – 17,188) [18.7]	0.1
16–20	61,229 (59,568 – 62,891) [10.0]	0.4	44,614 (43,197 – 46,030) [9.2]	0.3	12,611 (11,853 – 13,369) [14.4]	0.1
21–25	17,624 (16,726 – 18,521) [2.9]	0.1	10,757 (10,058 – 11,456) [2.2]	0.1	5,533 (5,027 – 6,039) [6.3]	<0.1
26–30	11,137 (10,422 – 11,851) [1.8]	0.1	6,166 (5,637 – 6,695) [1.3]	<0.1	4,387 (3,935 – 4,838) [5.0]	<0.1

BCIS, breast carcinoma *in situ*; DCIS, ductal carcinoma *in situ*; LCIS, lobular carcinoma *in situ*.

^aIncludes 38,511 BCIS survivors with unknown/other histology (i.e. not classified as either DCIS or LCIS).

^bThere were an estimated 4,437 BCIS survivors within unknown race (2,896 DCIS, 1,163 LCIS, and 378 unknown/other histology).

^c Includes American Indians, Alaska Natives, and Asian/Pacific Islanders.