

LONG-TERM BREAST CANCER RISK AFTER BENIGN BREAST DISEASE IN POPULATION-BASED SCREENING

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BACKGROUND

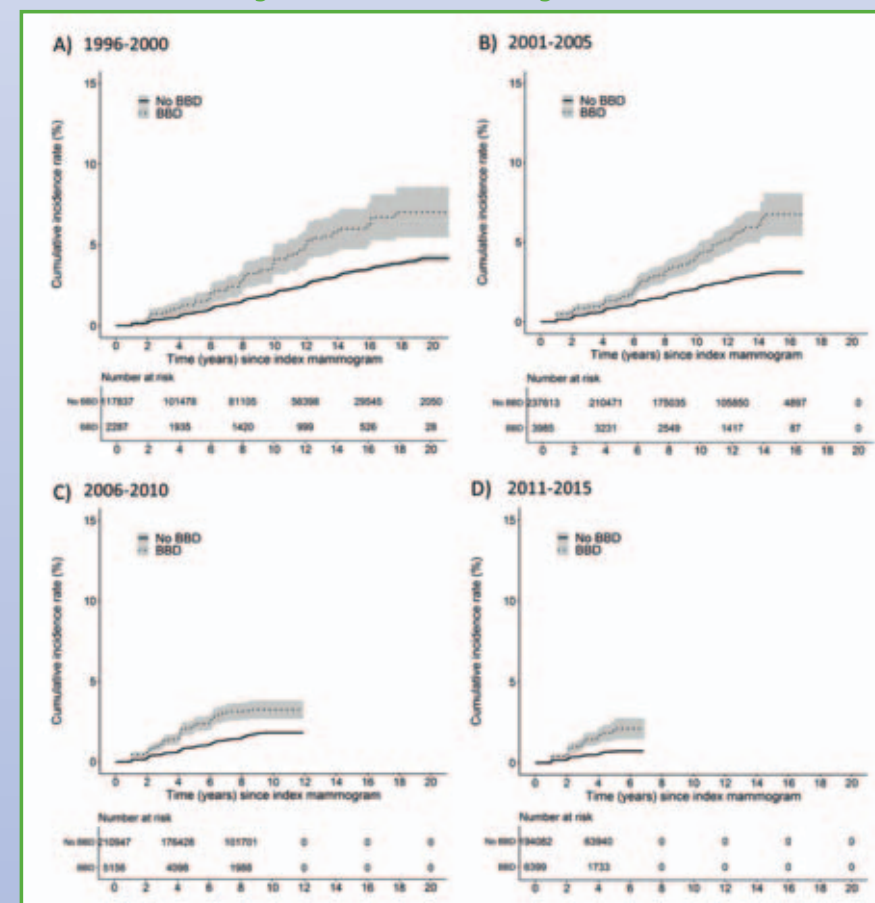
Benign breast disease is a risk factor for developing breast cancer later in life. The long-term impact of these lesions on the risk of developing cancer has been little studied. This information is key to improve care and design personalized screening strategies for these women. We aimed at assessing the long-term risk of breast cancer after benign breast disease diagnosed in population-based breast cancer screening.

RESULTS

Over the study period, 17 827 (2.3%) women were diagnosed with benign breast disease and 11 708 (1.5%) had an incident breast cancer, corresponding to an incidence rate of 14.8 (95% CI 14.5 to 15.1) per 1000 women without a benign breast disease; and 24.8 (95% CI 22.6 to 27.2) in women with a benign breast disease. Overall, the adjusted risk was 1.77 times higher (95%CI: 1.61 to 1.95) in women with benign breast disease.

The cumulative rate of breast cancer among women with benign breast disease exceeded that of those without a benign breast disease in every calendar period studied, and the observed risks continued to diverge with increasing time since index mammogram (Figure 1). The excess risk was independent of year (period) at index mammogram.

Figure 1. Cumulative incidence rates of breast cancer in women with and without benign breast disease according to year at index mammogram strata; (a) 1996-2000, (b) 2001-2005, (c) 2006-2010, (d) 2011-2015. The solid line represents women without benign breast disease; the dashed line represents women with a benign breast disease diagnosis.

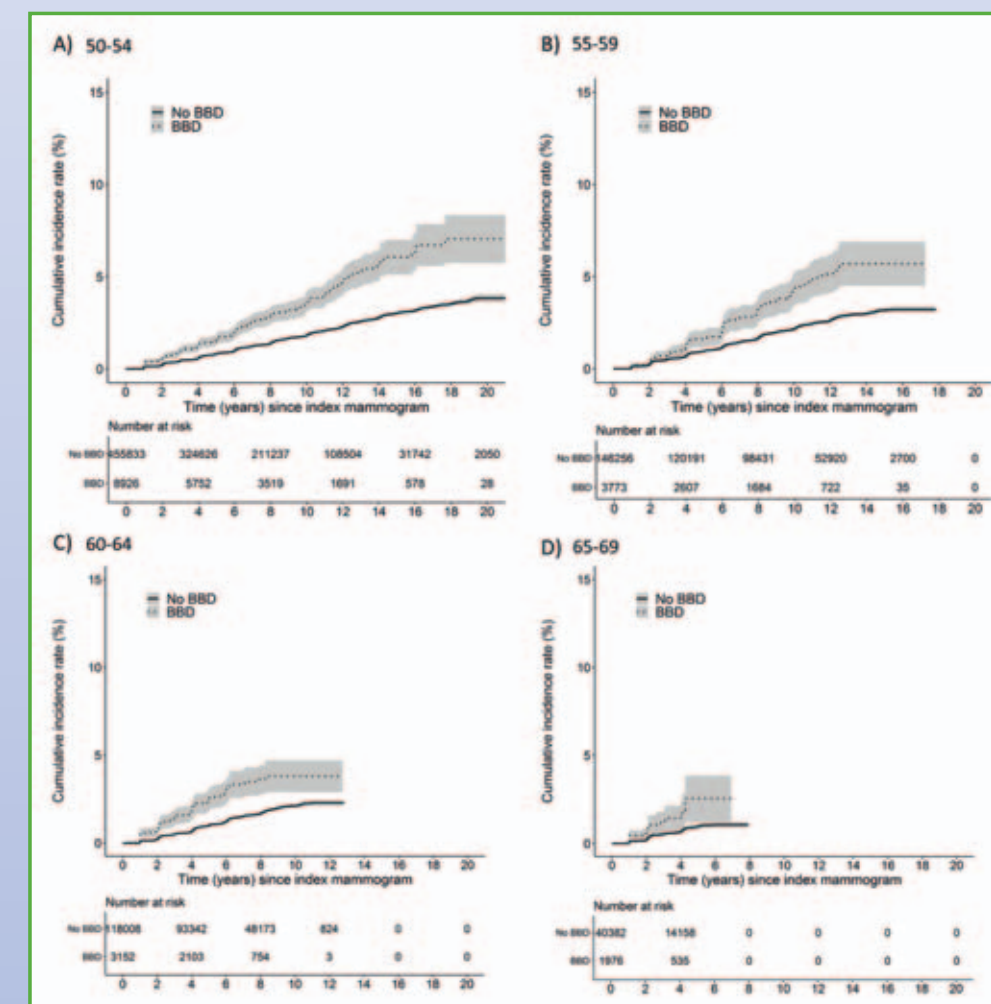


METHODS

We analysed individual-level data from 778 306 women aged 50-69 years with at least one mammographic screening participation in ten Breast Cancer Screening centres in Spain between 1996 and 2015, and followed-up until 2017 to identify interval cancers. We compared rates of incident breast cancer among women with and without benign breast disease according to time since index mammogram (0-4, 5-8, 8-12, > 12 years), year at index mammogram and age at index mammogram. We calculated crude and adjusted rate ratios to compare both groups. Poisson regression was used for adjusted analyses.

Regarding age strata, the cumulative rate of breast cancer for women with benign breast disease exceeded that of those without a benign breast disease in every age range studied (Figure 2). The cumulative incidence rate of breast cancer for women with benign breast disease also diverged with increasing time.

Figure 2: Cumulative incidence rates of breast cancer in women with and without benign breast disease according to age at index mammogram strata; (a) 50-54, (b) 55-59, (c) 60-64, (d) 65-69. The solid line represents women without benign breast disease; the dashed line represents women with a benign breast disease diagnosis.



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During the study period, 242 557 women were followed for up to 4 years, 179 167 for 5-8 years, 188 399 for 9-12 years, 150 356 for more than 12 years. The excess risk in women with benign breast disease remained increased over time, with relative risk 1.99 (95%CI: 1.73 to 2.29) for those followed less than 4 years, to 1.96 (95%CI: 1.32 to 2.92) for those followed 12 to 20 years (Figure 3).

Figure 3: Crude and adjusted rate ratios of incidence breast cancer in women with benign breast disease, by year at index mammogram, age at index mammogram and time since index mammogram. For each variable, adjustment was for all other variables shown.

| | No Benign Breast Disease | Benign Breast disease | Crude Ratio (95% CI) | Adjusted Ratio (95% CI) |
|-----------------------------|--------------------------|-----------------------|----------------------|-------------------------|
| Year of mammogram | Cases/ Women | Cases/ Women | | |
| 1996-2000 | 2776/117,837 | 95/2,287 | 1.76 (1.44 - 2.16) | 1.49 (1.21 - 1.82) |
| 2001-2005 | 5042/237,613 | 156/3,985 | 1.84 (1.57 - 2.16) | 1.57 (1.34 - 1.85) |
| 2006-2010 | 2715/210,947 | 128/5,156 | 1.93 (1.62 - 2.30) | 1.95 (1.64 - 2.33) |
| 2011-2015 | 733/194,082 | 63/6,399 | 2.61 (2.02 - 3.37) | 3.11 (2.41 - 4.03) |
| Age at mammogram | | | | |
| 50-54 | 6477/455,833 | 233/8,926 | 1.84 (1.61 - 2.09) | 1.68 (1.47 - 1.91) |
| 55-59 | 2938/146,256 | 107/3,773 | 1.41 (1.16 - 1.71) | 1.53 (1.26 - 1.86) |
| 60-64 | 1645/118,008 | 79/3,152 | 1.80 (1.43 - 2.25) | 2.38 (1.90 - 2.98) |
| 65-69 | 206/40,382 | 23/1,976 | 2.28 (1.48 - 3.51) | 3.25 (2.11 - 5.00) |
| Time since mammogram | | | | |
| 0-4 | 4096/242,557 | 201/7,582 | 1.57 (1.36 - 1.81) | 1.99 (1.73 - 2.29) |
| 4-8 | 3990/179,167 | 147/4,662 | 1.42 (1.20 - 1.67) | 1.58 (1.34 - 1.86) |
| 8-12 | 2337/188,399 | 69/3,361 | 1.66 (1.30 - 2.10) | 1.64 (1.29 - 2.08) |
| >12 | 843/150,356 | 25/2,222 | 2.01 (1.35 - 2.99) | 1.96 (1.32 - 2.92) |

CONCLUSION

Women with benign breast disease are at increased risk of breast cancer up to two decades after the lesion was found. Current management of benign breast lesions does not take into account the magnitude of the risk or its long-term nature. Women with benign lesions could benefit from closer monitoring and could benefit from closer surveillance and more personalised screening strategies.