Aetiology

Review: breastfeeding is associated with reduced risk of breast cancer


QUESTION: Is breastfeeding associated with a decreased risk of breast cancer?

Data sources
(Studies were identified from review articles, computer aided literature searches, and discussions between the authors and their colleagues. The principal investigators of all the studies identified were invited to collaborate. Subsequently, a list of studies and references was sent to collaborators who were then asked if they knew of further studies that were not listed; the principal investigators of those studies were also invited to collaborate.)

Study selection
Studies were selected if they were cohort or case control studies, had data on ≥ 100 women with incident invasive breast cancer, and had data on each woman with respect to reproductive factors, including childbearing and breastfeeding.

Data extraction
Data were extracted on total number of pregnancies; age at each pregnancy; outcome of each pregnancy; total number of children breastfed; total (lifetime) duration of breastfeeding; whether each individual live born child had been breastfed, and, if so, for how long; and parity. A woman’s parity was defined as the total number of births (all live births and stillbirths). In studies without details on stillbirths, a woman’s parity was taken to be the total number of live births. The main outcome was relative risk (RR) for breast cancer in relation to lifetime duration of breastfeeding.

Main results
5 cohort studies (n=4185 women with breast cancer and 22,577 controls) and 42 case control studies (n=46,117 women with breast cancer and 74,396 controls) from 30 countries met the selection criteria. The average number of births per woman was 2.2 and 2.6 in the breast cancer and control groups, respectively. 16% and 14% of women in the breast cancer and control groups, respectively, were nulliparous. 71% and 79% of parous women in the breast cancer and control groups, respectively, had ever breastfed. The average lifetime duration of breastfeeding was 9.8 and 13.6 months for parous women with breast cancer and parous women in the control group, respectively. In all parous women, the RR of breast cancer decreased with increasing duration of breastfeeding (reduction in the RR per 12 months of breastfeeding 4.3%, 95% CI 2.9% to 5.8%). In the absence of breastfeeding, each birth reduced the RR of breast cancer by 7.0% (CI 5.0% to 9.0%). The overall effect of breastfeeding did not vary by country (developed v developing), age at diagnosis, education, previous use of hormonal contraceptives, use of alcohol or tobacco, menopausal status, ethnic origin, body mass index, parity, age at menarche, and age at first birth of the women.

Conclusions
The relative risk of breast cancer decreases with increasing duration of breastfeeding. This effect is consistent after adjustment for possible confounders.


COMMENTARY
In this meta-analysis, the Collaborative Group on Hormonal Factors in Breast Cancer combined the results of 42 case control studies with the results of 5 cohort studies (included by using a nested case control design) to obtain odds ratios. As the incidence of breast cancer cannot be computed from case control studies, the calculation of RR in its original definition was not possible and hence was approximated from odds ratios.

The inverse relation between breastfeeding and breast cancer was maintained in a separate analysis including cohort studies only, which showed a 4.6% reduction in RR per 12 months of breastfeeding (standard error 1.8). Although each study type may be subject to different biases, the overall influence of breastfeeding on breast cancer risk remains similar across each study design. As a result, it appears sensible to combine both study types for the final analysis.

The consideration of confounders in the analysis of non-randomised studies is of primary importance. A number of clinically relevant, potential confounding factors were included in the analysis. These factors did not alter the final conclusion.

The methods used for data collection and statistical analysis were clearly reported and well conducted. Similar results have been reported despite the use of different inclusion/exclusion criteria and analytic methods in a meta-analysis done by another group.1 The consistency of outcome suggests robustness of the conclusions. It would be useful to explore in more detail the cause and effect relation assumed in this article to bring out important nuances in the analysis of such data. This exploration would include a detailed discussion of the estimated results in light of causality criteria, such as strength, consistency, specificity, and coherence of the association; temporality; biological gradient and plausibility; duration effect; and experimental evidence.

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