Mammography Screening and Breast Cancer Mortality—Letter

Philippe Autier and Mathieu Boniol

A case–control study in the Netherlands found that participation in mammography screening reduced the risk of dying from breast cancer by 49% (1). Cases were women who were diagnosed with breast cancer and died from it. Controls were women who were still alive at the date of death of the case and were breast cancer free at the date of breast cancer diagnosis of the case. We believe that methodologic limitations inherent to the case–control design undermine the credibility of findings. Despite the absence of financial barriers for participation in the Dutch mass screening program, in general, nonparticipating women are more deprived, have more co-morbidities, and have a higher risk of dying from breast cancer or from other causes than women participating in screening (2, 3). Hence, screening participants and nonparticipants present genuine differences in risk factors associated with dying from breast cancer or from other causes.

Consequently, in the study by Otto and colleagues (1), controls were more likely to be women participating in screening simply because they were less likely to die from any cause in the time interval between the breast cancer diagnosis and the breast cancer death in the case. In addition, although a number of nonparticipants died from breast cancer for reasons unrelated to screening (e.g., lower compliance to treatments, higher prevalence of obesity), the case–control design implied that these deaths were due to not having been screened (confounding by indication). The method used to correct for the fact that women at higher risk to die from breast cancer or from other cause would participate less to screening (self-selection) is based on a correction factor calculated as the relative risk of death from breast cancer among nonparticipants compared with breast cancer mortality rates before screening introduction (4). This method, however, leads to biased results when applied to data collected during a period when breast cancer mortality was decreasing, which was the case in many European countries after 1990 (5). For instance, the correction factor decreases with decreases in breast cancer mortality in nonparticipants due to improved treatments. Mortality reductions after 1990 are positively correlated with mortality rates that prevailed in the 1980s (5). Therefore, the correction factor will decrease with increasing mortality rates before screening commences. Furthermore, correction for self-selection is unable to adjust for confounding by indication occurring after screening introduction, for instance, imbalances in disease management between participants and nonparticipants.

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No potential conflicts of interests were disclosed.

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