Re: Breast Tissue Composition and Susceptibility to Breast Cancer

Boyd et al. (1) review many studies that have suggested that high mammographic density (a radiological parameter) is a risk factor for breast cancer. However, there is no consensual definition for high mammographic density (2) nor has this parameter led to any consensual modifications of screening modalities for women with breasts described as “dense.” In addition, all histological correlation studies conducted to date were ex vivo, and none took into account the water content of the breast as measured by magnetic resonance imaging (MRI) (3). Unlike mammography, MRI is able to distinguish between intermingled and central dense tissue distribution patterns in breast with a three-dimensional analysis (4), and a recent study using MRI suggests that there is no correlation between mammographic density and qualitatively assessed fibroglandular tissue in women with dense breasts (5).

Mammographic density is expressed as the percentage of dense tissues within a compressed whole breast. The radiological appearance of breast density varies according to mammographic procedures, x-ray attenuation properties, x-ray exposure values, compressed thickness of the breast, and variability in positioning the breast for a mammogram (2,6). Furthermore, mammographic procedures in screening programs are quite variable and often not well described (2). Breast density evaluation also depends on the number of mammographic views (one or two). Thus, it is unlikely that physicians will accept this parameter as a risk factor for breast cancer as long as a reproducible quantification in three dimensions is not available (6).

Breast density varies over time depending on hormonal status, age, weight, and the fatty proportion in breast. Thus, a 50-year-old woman who is classified as being at high risk of breast cancer based on an estimated breast density of 75% of the whole breast would be at low risk if she weighed 25 kg more because the increased fatty component reduces the proportion of the dense area.

No widely accepted additional radiological procedures have been established for breasts that are considered dense. Screening mammograms in all epidemiological studies were performed with analogic technologies (2). However, the recurring debate about breast density might be modified with digital technologies (2). Indeed, a large prospective study has suggested the value of digital mammography in detecting cancers in dense breasts (7). Thus, there is no convincing justification to date for telling a woman that she is at high risk of breast cancer (and inducing high anxiety) because she has “dense breasts.” Systematically considering a woman at high risk of breast cancer solely on the basis of this variable x-ray parameter may cause a cascade of further tests and generate false-positive results, while the benefits of these strategies are neither proven nor measured.

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References