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Diagnostic Value of Mammogram for Breast Cancer Screening in Women With Dense Breast Tissue

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Breast cancer is the second most prevalent cancer among women in the United States (1). Women at a younger age are more likely to have an aggressive case with a poorer prognosis. In the US, about 33,000 women younger than 45 years old are diagnosed with breast cancer annually. Among this age group, breast cancer is the leading cause for cancer-related deaths. It is predicted that around one in eight women will get breast cancer (2). Women younger than 45 years old account for approximately nine percent of all new cases of breast cancer in the US. In addition, dense breast tissue is more prevalent in younger women. Unlike fatty breast tissue, dense breast tissue absorbs more radiation during mammograms (3,4). Therefore, the accuracy and the diagnostic value of mammograms decrease for breast cancer detection among women with dense breast tissue (3). Dense breast tissue increases the risk for developing breast cancer by 4.7 times (1). Studies showed ultrasound (US) increases the breast cancer detection among women with dense breast tissue (1,5). In women with dense tissue adding US testing increased detection sensitivity as compared to only Mammogram screening (6). Regardless of breast type, density, and history, magnetic resonance imaging (MRI) has the highest, and mammography has the lowest sensitivity for breast cancer detection (7). The predicted total cost of metastatic breast cancer will be US$ 152.4 in 2030 (8). The cost-effectiveness of breast cancer screening with MRI among younger women with dense breast tissue is controversial. A false negative mammogram leads to a failure in finding breast cancer advancement early enough to prevent incurable stages and therefore a premature death (9). In addition, false positive mammograms can cause anxiety and additional costs for women with no breast cancer (9). A quality-assured mammographic screening program showed about two-thirds of women with breast cancer at the time of screening will remain underdiagnosed or the cancer will not be detected early enough so it progresses to metastatic cancer (9,10). Although only women with breast cancer can benefit from mammogram screenings, many of these women remain underdiagnosed, and some healthy women will be over diagnosed (9). The question is whether a mammogram is a reliable screening test for breast cancer detection or not, especially among women with dense tissue. Therefore, further research with the focus on avoiding underdiagnosis is needed. Using a mammogram as a screening tool may not be appropriate for all types of breast tissues (9). Breast MRI can be a more reliable test for early detection of breast cancer in women with dense tissue (11,12). Literature lacks evidence regarding the cost effectiveness of MRI screening for breast cancer. Retrospective studies can determine the amount of false negative mammograms. In addition, retrospective studies can compare the diagnostic value of MRI with mammograms especially by identifying what percentage of false negative mammograms will be diagnosed using MRI. It is significant to identify the best breast cancer screening technique as it will help early cancer detection and improve management.

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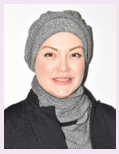

Ethical Issues

Not applicable.

Conflict of Interests

The authors have no conflicts of interest to disclose.

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