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COMMENT ON "RELATIONSHIP OF BREAST CANCER TYPES WITH TISSUE DENSITY AND PATIENT AGE, RIYADH, SAUDI ARABIA, 2012-2020"

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Dear Editor,

We read with great interest the article "Relationship of breast cancer types with tissue density and patient age, Riyadh, Saudi Arabia, 2012-2020"[1]. In their analysis, Alshakarh et al[1] reported a correlation between age, breast density, type of cancer and the importance of early detection of breast cancer as well as implementation of personalized screening program in high-risk women. The analysis advocated the need for screening program implementation, especially in younger age patients.

Screening programs significantly improved in breast cancer survival and disease free survival[2]. Programs are heterogenous and age ranges stand at forty to seventy years old with variations from country to country[3]. In Saudi Arabia, the Ministry of Health promoted primary prevention through screening programs with mammography examinations biennially in women over 40 years of age[1]. This program involved younger patients compared to others that consider 45 or 50 years of age as the cut-off for entering the screening program.

Screening of younger patients can certainly help in early diagnosis, including the observed increase in *in-situ* carcinoma among women of this age group, especially with the advancement of digital mammography in recent years[4]. This increase was also reported in the Saudi Arabian study[1]. Furthermore, as reported by some authors[4,5], this could lead to overtreatment in this population, even if the related data in the literature are debated.

As reported by Alshakarh et al[1] and confirmed in the literature, usually younger patients presented more aggressive breast cancer types[5,6]. In those patients, early diagnosis incidence rate was lower and usually, at diagnosis, younger patients presented lymph nodes involvement[7,8]. Nodal involvement, despite the progress in genetic evaluation and tailored treatments, remains one of the most influent prognostic factors for overall survival and disease-free survival[9-11]. Detection of early breast cancer in these patients could lead to significant advance in terms of oncological outcome and in reduction of invasive surgery[12]. In their study, Alshakarh et al[1] delineated the importance of breast tissue exposure rather than chronologic age as a measure to define breast cancer incidence. Glandular tissue exposure refers to the area that is exposed to cumulative hormonal and lifestyle changes throughout life[13]. While reducing these risk factors is of high importance, achieving early diagnosis remains the fundamental issue.

Diagnosis of breast cancer in young patients, especially in early stage, could be challenging. The authors reported a strong correlation between breast density and age, but glandular solidity was independent from cancer type[1]. High density breast is difficult to investigate, and often mammograms and ultrasound are insufficient[1]. As reported by the authors, only 42% of mammograms or ultrasound imaging were highly suspicious for malignancy. This percentage could be lower considering the patients' age

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and breast tissue density[1]. Magnetic resonance, breast tomosynthesis or contrast-enhanced mammography are beneficial screening modalities in patients with dense breast tissue[1,14]. This radiological methodology could reduce the number of uncertain lesions leading to a reduction in biopsies and advantages in terms cost and psychological burdens on patients and their families[1,15]. Furthermore, small suspicious lesions could be encountered by obtaining an early diagnosis even in younger patients with dense breast tissue[15]. Despite these clinical advantages, advanced breast imaging modalities are not feasible for screening programs. In the study, Alshakarh et al[1] highlighted the advantages in incorporating risk-based models for breast cancer screening. In concordance with the authors, we strongly believe in personalized screening programs which contemplate age, age of menarche, first pregnancy, live deliveries, family history of breast cancer as well as breast tissue density. Especially in younger patients, the screening modality should be tailored according to personal and family history and glandular characteristics in order to reduce the cases of advanced breast cancer in this population.

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