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### Scientific Formal (Paper) Presentations

CODE: SSJ01-03

SESSION: SSJ01

**Younger Women with Breast Cancer Show Highest Risk from Increased Density Together with Abnormal Density Regression with Age**

#### Date/Times

- **DATE: Tuesday**
- **TIME: 3:20 -3:30 PM**
- **LOCATION: Arie Crown Theater**

#### PARTICIPANTS

- Nicholas M Perry MD - Nothing to disclose.
- Stephen W Duffy undefined - Nothing to disclose.
- Sue E Milner BSC - Nothing to disclose.
- Kefah Mokbel MD - Nothing to disclose.
- Katja Pinker-Domenig MD - Nothing to disclose.

#### SUBSPECIALTY CONTENT

- Breast (Imaging and Interventional)

#### PURPOSE

To assess whether the link between quantitatively measured breast density and associated cancer risk differs between younger and older women, and if so, could this relate to differing patterns of density regression with age in breast cancer patients compared to healthy controls.

#### METHOD AND MATERIALS

282 histopathologically verified breast cancer cases (age range 30-83) and 317 healthy controls matched by date of birth, age at examination and laterality of mammogram used for density determination were included in this IRB approved retrospective study. All breast cancer cases and healthy controls underwent FFDM with breast density measured separately on MLO and CC images using an automated volumetric breast density measurement system (Hologic, Quantra). For each cancer case, the contralateral mammogram was used. Breast density as percentage (%) of fibroglandular tissue was analysed by Quantra. After log transformation we performed polynomial regression to assess the age effect on breast density risk in cases and controls.

#### RESULTS

Breast cancer patients showed higher mammographic density than controls up to the age of 50. Healthy controls demonstrated a significant decline in log % density with age following a linear pattern resulting in the equation:  $[\log(\text{density}) = 3.6926 - 0.0126 \times \text{age}]$ . In breast cancer patients there was a significant departure from linearity, and a term in the square of age was required, as follows:  $[\log(\text{density}) = 5.6531 - 0.0822 \times \text{age} + 0.0006 \times \text{age}^2]$ . Both the coefficient for age and that for the square of age were highly significant ( $p < 0.001$  and  $p = 0.001$  respectively).

#### CONCLUSION

The data suggest that automated volumetric breast density measurement is predictive of breast cancer risk in younger women from the age of 30 and that the risk of breast cancer may be related to an altered pattern of density regression with age.

#### CLINICAL RELEVANCE/APPLICATION

Younger women are at highest risk of density-associated breast cancer and early estimation of density may be useful in offering enhanced screening to some.