Impact of artificial intelligence system and volumetric density on risk prediction of interval, screen-detected, and advanced breast cancer

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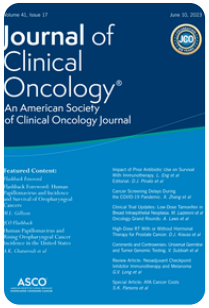

Purpose

Artificial intelligence (AI) algorithms improve breast cancer detection on mammography, but their contribution to long-term risk prediction for advanced and interval cancers is unknown.

Study design

Researchers identified 2,412 women with invasive breast cancer and 4,995 controls matched on age, race, and date of mammogram, from two US mammography cohorts, who had two-dimensional full-field digital mammograms performed 2-5.5 years before cancer diagnosis. We assessed Breast Imaging Reporting and Data System density, the Transpara exam score (1-10), and volumetric density measures. We used conditional logistic regression to estimate odds ratios (ORs), 95% CIs, adjusted for age and BMI, and C-statistics (AUC) to describe the association of AI score with invasive cancer and its contribution to models with breast density measures. Likelihood ratio tests (LRTs) and bootstrapping methods were used to compare model performance.

Results

2412 Patients w/ invasive breast cancer

4995 BMI- and age-matched controls

2 - 5.5 Years

transpara® By ScreenPoint Medical + **Density Measure** (BIRADS-Like) = **Indication for Long-Term Risk**

Combined density & Transpara score for risk prediction showed highest discriminatory accuracy for advanced and interval cancers:
AUC = 0.648

AUC, Density alone = 0.583

transpara® By ScreenPoint Medical

1 unit score increase (1-10 scale):
20% greater odds of invasive breast cancer

Results consistent regardless of Breast Density, Ethnicity, or Age

Conclusion

Transpara coupled with breast density independently contributed to long-term risk prediction of invasive breast cancers, in particular, advanced cancer.

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