AB011. SOH21AS231. Is radiomics a feasible alternative to OncotypeDXTM recurrence score testing?—a systematic review and meta-analysis

Matthew Gerard Davey, Peter Francis McAnena, Aoife Lowery, Michael Kerin

Department of Surgery, The Lambe Institute for Translational Research, National University of Ireland, Galway, Ireland

Background: Genomic signatures such as OncotypeDXTM recurrence score (RS) aid adjuvant therapeutic decision in early stage estrogen receptor positive breast cancer. Radiomics involves the extraction of quantitative characteristics from tumour tissue to aid diagnosis, prognostication and therapeutic decision making. We aimed to perform a systematic review of current evidence evaluating the compatibility of radiomics and RS testing.

Methods: A systematic review and meta-analysis was performed in accordance to PRISMA guidelines. Retrospective cohort studies comparing radiomic tumour analyses and RS were identified. Receiver operating characteristics (ROC) and area under curve (AUC) were determined from low risk (RS <18) vs intermediate-high risk (>18) and low-intermediate risk (RS <30) and high risk (RS >30). Log rate ratios (LnRR) and standard error were determined from AUC and 95% confidence intervals (CI).

Results: Five studies including 626 patients met inclusion criteria; the mean age at diagnosis was 52.3 years. Mean RS was 15 (range, 1–75), and 286 with RS <18, 201 with RS 18–30 and 55 with RS >30. Radiomic testing was comparable with RS for differentiating cancers with RS <18 *vs.* RS >18 (RR: 0.93, 95% CI: 0.85–1.00, P=0.010, heterogeneity (I^2) =0%). However, radiomics was less accurate for differentiating those with RS <30 *vs.* RS >30 (RR: 0.76, 95% CI: 0.68–0.84, P<0.001, I^2=0%).

Conclusions: Radiomic tumour analysis is comparable to genomic assays currently included in breast cancer patient management. Future evaluation should incorporate radiomic testing into practice to enhance diagnostics, prognostication as well as therapeutic decision making in those diagnosed with breast cancer.

Keywords: Breast cancer; radiomics; genomics; personalised medicine; precision medicine

Footnote