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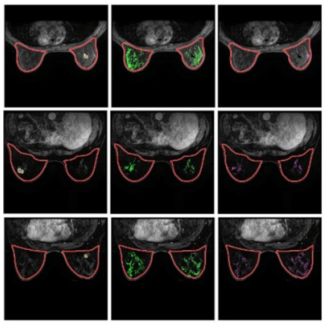
DCE-MRI Technique to Predict Breast Cancer Recurrence Risk



A groundbreaking study led by Dr Dooman Arefan from the University of Pittsburgh has unveiled a promising method for predicting breast cancer recurrence risk. The research, published in *Radiology*, sheds light on how quantitative background parenchymal enhancement (BPE) measurements at dynamic contrast-enhanced MRI (DCE-MRI) could predict the recurrence risk of breast cancer, as an alternative to the Oncotype DX recurrence.

Study Overview

The retrospective analysis involved 127 women who had been diagnosed with breast cancer between January 2007 and January 2017. An in-house developed algorithm was employed to automatically compute quantitative BPE in both breasts of the participants. The study discovered a notable correlation between these BPE measurements and the Oncotype DX recurrence score.

Key Findings

Integrating BPE measures with tumour radiomics in DCE-MRI, the researchers were able to distinguish between patients with high and low/intermediate risk of recurrence scored effectively. This method demonstrated remarkable predictive accuracy, comparable to the Oncotype DX recurrence score. The study indicates that both ipsilateral and contralateral BPE, quantified through dynamic MRI, are relevant markers for identifying patients at a heightened risk of breast cancer recurrence.

Predictive Power and Clinical Utility

The combined models exhibited robust predictive capabilities, as evidenced by an area under the receiver operating characteristic curve of 0.94 in the development set and 0.79 in the test set. Moreover, these models showed high negative predictive values in predicting actual distant and local recurrences, enhancing their clinical utility in managing breast cancer.

Implications and Future Direction

This research marks a significant step forward in utilising advanced imaging techniques to improve prognostic accuracy in breast cancer care. While acknowledging the inherent limitations of retrospective studies and the specific cohort characteristics, the researchers emphasise the need for further investigation into the integration of quantitative BPE measures and radiomic features. Such research could significantly refine breast cancer prognosis and patient outcomes, offering a more accessible, non-invasive, and cost-effective alternative to current methodologies.

Source: Radiology

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