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## Virtual touch tissue imaging and quantification: to aid conventional ultrasound in malignancy prediction for complex cystic and solid breast lesions

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This study aimed at the usefulness of conventional ultrasound (US) and US elastography, especially the latest virtual touch tissue imaging and quantification (VTIQ), in malignancy prediction for complex cystic and solid breast lesions. Eighty-nine complex cystic and solid breast lesions were subject to conventional US and US elastography, including strain elastography (SE), virtual touch tissue imaging (VTI) and VTIQ. Among the 89 lesions, thirty-four (38.2%) lesions were malignant and 55 (61.8%) lesions were benign. Sixteen variables were subject to multivariate logistic regression analysis. Pattern 4b in VTI (odds ratio, OR:15.278), not circumscribed margin of lesion (OR:12.346), SWS mean > 4.6 m/s in VTIQ (OR:11.896), and age elder than 50 years (OR:6.303) were identified to be independent predictors for malignancy. In receivers operating characteristic (ROC) curve analyses, associated areas under the ROC curve (Az) for conventional US could be significantly elevated, from 0.649 to 0.918, by combining with US elastography ( $p < 0.0001$ ). The combined diagnostic method was able to improve the specificity (32.7% vs. 87.3%,  $p < 0.0001$ ) without sacrificing the sensitivity (97.1% vs. 85.3%,  $p = 0.075$ ). Both conventional US and US elastography contribute substantially to malignancy prediction in complex cystic and solid lesions. The diagnostic efficacy of conventional US in terms of Az and specificity could be significantly improved by combining with US elastography.

### Biography

Ying Zhang has completed her Bachelor's degree from Wenzhou Medical University in 2009. And then she has been working as an Ultrasound Physician in Ningbo Medical Center Lihuli Hospital. Now, she is a Graduate student of Tongji University School of Medicine and will complete her Master's degree in June 2018. She is major in Medical Imaging and Nuclear Medicine.

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