

# Evaluation of contrast-enhanced ultrasound in the differential diagnosis of breast lesions

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## Abstract

**【Purpose】** To evaluate the significance of contrast-enhanced ultrasound (CE-US) with Sonazoid® in the differential diagnosis of malignant and benign breast lesions.

**【Subjects and Methods】** Seventy-five patients (all women, mean age 56 years) with 81 histologically confirmed breast lesions (66 malignant and 15 benign) were evaluated. The enhancement patterns of the lesions were stored for 1 minute after bolus injection of the micro bubble contrast agent “Sonazoid®”. Enhanced signals from lesions were assessed for the degree of intensity, which was compared to surrounding breast tissue, and the size of the enhanced area was compared to lesions recognized in the B mode by visual observation. Time intensity curve (TIC) analysis was performed by placing the regions of interest (ROI) at lesions and using breast tissue as a reference. The following seven items were calculated: time to peak (TTP, s), ascending slope (AS, 10-E5 AU/s), peak intensity (PI, 10-E5 AU), mean transit time (MTT, s), area under the curve (AUC, 10-E5 AU), area under the wash in (AUWI, 10-E5 AU), and area under the wash out (AUWO, 10-E5 AU). Each value was compared between benign and malignant lesions.

**【Results】** The degree of intensity in malignant lesions was significantly higher than that in benign lesions ( $p < 0.001$ ). The enhanced area in malignant lesions was significantly larger than that in benign lesions ( $p < 0.001$ ). The AS, PI, AUC, AUWI, AUWO values in malignant lesions were all significantly higher than those in benign lesions. There were no significant differences in TTP and MTP values between malignant and benign lesions.

**【Conclusion】** CE-US might be useful in the differential diagnosis of breast lesions.

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## Keywords

contrast-enhanced ultrasound, breast, diagnosis, time intensity curve.

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