

Usefulness of a Strain Ratio in the Differential Diagnosis of Breast Lesions

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Abstract

[Purpose] The purpose of this study was to assess diagnostic performance of strain ratio (SR) which is calculated by ultrasound elastography in differential diagnosis of breast lesions under uniformed procedure. [Subjects and Methods] Eighty-four lesions in 82 patients (mean age 54 years) were examined using Aplio XG (TOSHIBA) with 12~18 MHz linear transducer. Each lesion was categorized according to The Japan Association of Breast and Thyroid Sonology (JABTS) criteria based on conventional B-mode. Category 4 and 5 were classified as malignant lesions. As uniformed criteria of elastography, absolute strain value above 0.28 with sinusoidal waveform data were adopted. SR was calculated using fat lesion ratio (FLR). SR above 5.00 was taken as a malignant lesion. Diagnosis was made by histopathological examinations. Two sonographers performed elastography for interobserver reliability. [Results and Discussion] FLR of benign lesions and malignant lesions were significantly different (3.46 ± 2.77 and 13.51 ± 12.64 , $P=0.000$). Sensitivity, specificity, accuracy, positive predictive value and negative predictive value of diagnosis made by categorical evaluation and elastography were 76.2%, 100%, 82.1%, 100% and 58.3% respectively. In lesions showed category 3, FLR of benign and malignant lesions-were significantly different (3.80 ± 2.91 and 11.09 ± 11.39 , $P=0.008$). ICC(2,1) was 0.980. [Conclusion] Calculation of SR with present measuring procedure was highly reproducible. SR could help in the differential diagnosis of breast lesions.

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Keywords

ultrasonography, elastography, breast tumor, strain ratio, interobserver reliability

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