

Analysis of 159 indeterminate breast lesions with ultrasound elastography in an oncology center

(AC Camargo Cancer Center, Brazil), Luciana Graziano (AC Camargo Cancer Center, Brazil) Almir Galvão Bittencourt (AC Camargo Cancer Center, Brazil), Camila Souza Guatelli (AC Camargo Cancer Center, Brazil), Miriam Poli (AC Camargo Cancer Center, Brazil), Juliana Alves Souza (AC Camargo Cancer Center, Brazil), Elvira Ferreira Marques.

BACKGROUND: Imaging methods are of fundamental importance for the management of patients with breast cancer, especially in the early diagnosis of non-palpable breast lesions. Currently, breast elastography was developed by us in order to obtain a more accurate characterization of breast lesions correlating the degree of compressibility of the lesions to malignancy, similar to the physical examination of the breasts. Published studies evaluating elastography show more hardened in malignant lesions in benign lesions. This test's main advantages combine US technology to the physical principles of elastography, besides being more comfortable, faster and less expensive than MRI.

HYPOTHESIS: To evaluate the diagnostic accuracy of elastography for breast cancer to identify and compare your results with the BI-RADS and histological findings.

METHODS: A cross-sectional study was conducted with prospective data collection from patients diagnosed with indeterminate breast lesions in the US and percutaneous or surgical biopsy indication in the Department of the AC Camargo Cancer Center Picture from June 2013 to May 2015 patients were evaluated with indeterminate breast lesions in the US who have agreed to participate and were subjected to examination of US elastography in proper equipment before the procedure. Elastography was evaluated by qualitative analysis and two methods for semi-quantitative analysis (relative injury / damage relative subcutaneous tissue and / adjacent tissue). To evaluate the diagnostic validity of elastography, the histological result was considered as the gold standard.

RESULTS: We evaluated 125 female patients with 159 lesions, mean age 47, range 20-85 years (standard deviation 11 years). The major axis of the lesions had an average of 15.6 mm, ranging from 3 to 68 mm (standard deviation of 11 mm). The higher frequency location of lesions was the lateral quadrants representing 54.1% of the total. Ultrasound proved to be a method with good sensitivity (98.1%), but with a lower specificity and accuracy compared to the diagnosis made with the US associated elastografias. The average value of lesion size represented no difference in classification by elastography. Qualitative analysis of elastography, specificity, and accuracy were 80.2% and 81.8%, respectively. For semi-quantitative elastography, the mean values were statistically significant and higher when compared with the subcutaneous tissue or tissue adjacent to malignant lesions. The analysis of individual ROC curve for these two semi-quantitative methods showed that both are considered satisfactory, represented with area under the curve above 0.75, with statistical significance ($p < 0.0001$). Qualitative and Elasticity injury / fat ratio exhibited better results than the lesion / adjacent tissue. Regarding the accuracy, qualitative elastography was superior to the other two methods.