484 - RELEVANT PREDICTORS OF MALIGNANCY BEYOND THE ACR BI-RADS® ATLAS FOR ULTRASOUND

Isabela Panzeri Carlotti Buzzatto[1], Jessica Maria Camargo Borba[1], Liliane Silvestre[1], Jurandyr Moreira de Andrade[1], Daniel Guimarães Tiezzi[1]

[1]Universidade de São Paulo, Faculdade de Medicina de Ribeirão Preto, Hospital das Clínicas – São Paulo (SP), Brazil.

Introduction: The ACR BI-RADS® ATLAS for ultrasound (US) is an excellent tool used to categorize breast masses and classify the masses into seven categories according to the risk of malignancy. However, it is well accepted that some clinical characteristics of the patients and functional characteristics of the masses can modify the risk of malignancy. ***Objective:*** This study aims to evaluate possible relevant predictors of malignancy in addition to the ACR BI-RADS® for US categorization. ***Methods:*** This is a cross-sectional study that included patients with breast masses who were submitted to US-guided core biopsy in our division, from January 2015 to December 2021. Patients included had masses measuring up to 3 cm in the greatest diameter. We evaluated all masses with Doppler sonography and obtained the resistance index (RI) of the vessel through spectral analysis, when penetrating vessels were identified. We retrospectively collected the clinical data from medical records. The study was approved by the Institutional Ethics Committee. ***Results:*** We included 924 patients with suspicious breast masses measuring up to 3 cm that underwent US-guided core biopsy. The mean age was 53.4 years and the median size of the mass was 1.7 cm. We had 621 palpable masses and 295 nonpalpable lesions. The Doppler analysis revealed penetrating vessels in 560 lesions and no penetrating vessels in 364. The median RI in the spectral analysis was 0.79. All masses were classified according to the ACR BI-RADS® ATLAS for the US, and the risk of malignancy observed in each category agrees with data from the literature. We compared the characteristics of the benign and malignant masses and their clinical and functional characteristics. Moreover, the presence of penetrating vessels in the mass in the Doppler analysis conferred a higher risk of malignancy for the lesions initially classified in subcategories 4a, 4b, and 4c based on the ACR BI-RADS® descriptors. To define the best RI cutoff point, we used the receiver operating characteristic curve. Using the cutoff point of 0.71, we achieved a sensitivity of 0.84 and specificity of 0.61; the area under the curve was 0.75. The risk of malignancy of lesions 4a that had internal vascularization and high RI (>0.71) was 25%, which is much higher than expected for the category. This was also observed in lesions 4b (70% risk of malignancy in the presence of vessels with high resistance). ***Conclusion:*** Clinical characteristics influence the risk of malignancy of the breast masses and functional characteristics of the masses, such as the presence of blood vessels in the Doppler analysis, especially vessels with high resistance can better define the risk of malignancy than the ultrasonographic characteristics alone.