Evaluation of suspicious breast calcifications with Positron Emission Mammography (PEM).

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BACKGROUND: Imaging methods are essential for the management of patients with breast cancer, especially in the early diagnosis of non-palpable lesions. Mammography is still the best method for evaluation of microcalcifications, which is the only manifestation in about 30-50% of non-palpable breast cancers, especially in carcinomas in situ. However, most suspicious calcifications detected in the mammograms are associated with benign alterations, generating a large number of unnecessary procedures. Positron Emission Mammography (PEM), has demonstrated high diagnostic accuracy for primary breast lesions, including carcinoma in situ, with sensitivity and specificity of up to 91% and 93%, respectively.
HYPOTHESIS: The aim of this study was to evaluate the diagnostic accuracy of Positron Emission Mammography (PEM) for identifying malignant lesions in patients with suspicious microcalcifications detected on mammography.
METHODS: Prospective, single-center study that evaluated patients with suspicious calcifications at mammography and formal indication for percutaneous or surgical biopsy. Patients who agreed to participate in the study underwent PEM in a dedicated unit before the biopsy. The PEM findings were compared with the histological findings.
RESULTS: We included 36 lesions, most of them classified as BIRADS 4 (83.3%). The mean age of patients was 56.7 years (28-81 years). Histological analysis showed 22 benign lesions (61.1%) and 14 malignant (38.9%). Within malignant lesions, 10 were ductal carcinoma in situ (DCIS), being 4 intermediate-grade and 6 high-grade. PEM was positive in 14 cases (38.9%), of which 13 were malignant. There was one false-positive result (fibroadenoma) and one false-negative (DCIS intermediate-grade). The sensitivity was 92.8%, specificity 95.5% and accuracy 94.4%. In conclusion, these preliminary findings showed that PEM was able to identify all invasive carcinomas and / or high-grade DCIS in the sample, suggesting that this method may be useful for further evaluation of patients with suspected microcalcifications.