

## Evaluation of Multifocal Carcinoma in Contrast Spectral Mammography

Daniella Paula Dias Coelho<sup>1</sup>, Sildomar Queiros e Silva<sup>1</sup>, Felipe Pereira de Loredo<sup>1</sup>, Jéssica Brito da Silva de Jesus<sup>2</sup>, Katiana Macedo do Vale Feitosa<sup>2</sup>, Bruno Sérgio Costa Brasil<sup>3</sup>, Edwance dos Santos Goes<sup>1</sup>, Sabrina Ramos Bianco<sup>4,5</sup>

<sup>1</sup>Residente of Radiology, Federal University of Amazonas, Brazil

<sup>2</sup>Bachelor of Biomedicine, Federal University of Amazonas, Brazil

<sup>3</sup>Estudant of Medicine, Federal University of Amazonas, Brazil

<sup>4</sup>Full Member of the Brazilian College of Radiology

<sup>5</sup>Setor de Ultrasonografia e Mamografia, Clínica Sensumed, Manaus, AM, Brasil

### Correspondence

Daniella Paula Dias Coelho

Residente of Radiology, Federal University of Amazonas, Brazil

E-mail: danielladiascoelho@gmail.com

Tel: +55 92 984168013

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### Abstract

The early diagnosis and the correct local staging of breast cancer determine the therapeutic schedule and the prognosis, and still constitute a challenge for health teams. Contrast spectral dual-energy mammography (CESM) is a valuable tool and its use is increasingly important in this evaluation. Among the indications, we highlight the evaluation of dense breasts, research of multifocal, multicentric or contralateral lesions, distinction between fibrotic lesions and tumor recurrence, evaluation after neoadjuvant chemotherapy and contraindications to breast resonance. This manuscript brings images of a CESM that identified multicentric lesions in a diagnostic mammographic evaluation, providing decisive information for therapeutic programming. This technique and its implementation in the evaluation of breast cancer are seldom discussed in the national literature, given the limited experience of radiologists and mastologists, a fact that justifies the dissemination of images and the discussion of different evaluation modalities.

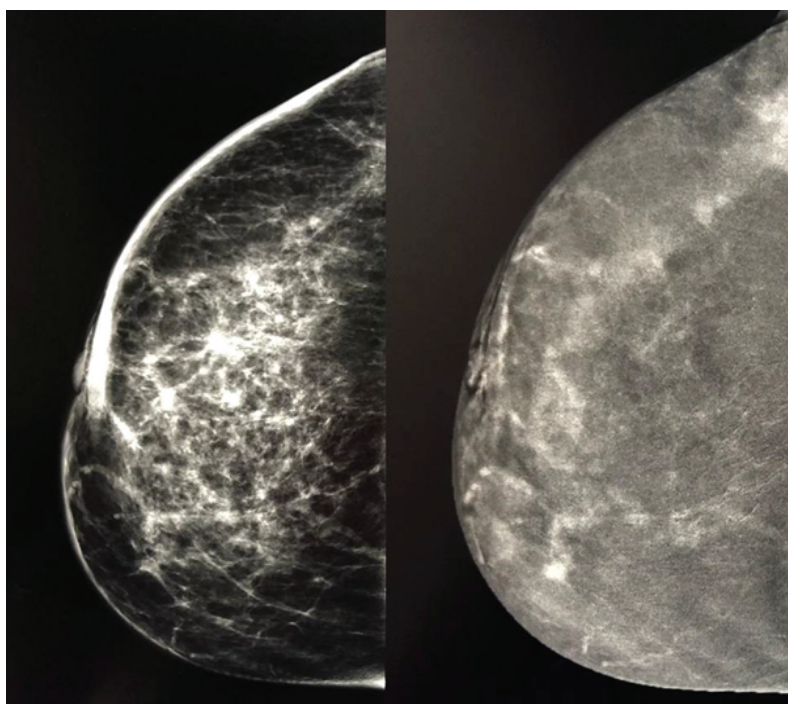
59 years old, with a history of excisional biopsy of a benign palpable nodule in the right breast in 2016. After two years, it had evolved into a hardened right breast, diffused skin thickening and brownish papules (Figure 1). Study indicated by CESM on 09/17/2018 for research of hidden, multifocal and multicentric injuries. First, a low-energy image was performed, similar to a digital mammography, with skin thickening of the right breast, notably in the periareolar region, heterogeneously dense breast with the presence of an irregular nodule in the middle portion of the right superolateral quadrant (Figure 2) and ipsilateral axillary lymph node disease. Then, a recombined image was obtained that shows the uptake of the intravenous iodinated contrast medium. The nodule located in the right superolateral quadrant was highlighted. It was also noted the presence of small parenchymal lesions, of multicentric distribution, with anomalous areas of enhancement (Figure 3). Undergoing radical mastectomy on the right, with sentinel lymph node survey, where grade II invasive breast carcinoma was observed, with the presence of seven nodules, of multicentric distribution, measuring the largest 1.7 cm, neoplastic involvement of the nipple, the skin, and metastasis in seven of eleven lymph nodes examined. CESM has become an important tool in the diagnosis

and staging of breast cancer. In comparison with conventional mammography, it has better sensitivity in identifying tumors that would normally be obscured by the dense breast parenchyma, better diagnostic accuracy in tumor sizing and identification of multifocal lesions [1-4]. For the local staging of breast cancer, CESM has slightly lower sensitivity than MRI for detecting an index lesion, however, it has showed significantly higher specificity, less false positives and significantly improved the positive predictive value (PPV) of the biopsy in the detection of additional tumor foci [5,6]. Studies have not shown a significant difference between the measurement of the lesion size at CESM and magnetic resonance imaging compared to postoperative histopathology [7,8]. CESM is a relatively new technology that has the potential to detect lesions not seen in conventional digital mammography, by reducing the effects of overlapping breast tissue and using contrast to enhance vascularized lesions, allowing better characterization of mammographic findings. It has advantages such as, greater accessibility, lower cost and less execution time. The use of CESM for tracking and local staging is still little discussed in our literature, but it has aroused worldwide interest, due to advantages such as greater accessibility, lower cost and shorter execution time, which can lead to a more effective therapy.

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**Figure 1.** Right breast showing hardened consistency, skin thickening and brownish macular lesions.



**Figure 2.** Cranio-caudal view. A) Spectral mammography with low energy contrast, skin thickening of the right breast is observed, notably in the periareolar region, heterogeneously dense breast with the presence of an irregular nodule in the middle portion of the superolateral quadrant. B) Spectral mammography with recombinant contrast showed nodule enhancement, in addition to nodular enhancement from other regions of the parenchyma.

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