Redefining MRI:
From Image to Insight

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Breast 3

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Contrast-Enhanced Mammography: Redefining Breast Perfusion Imaging

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Contrast-enhanced mammography (CEM) is a digital mammography that obtains images by subtracting two images, one with low energy and one with high energy, after injecting a nonionic iodine contrast agent. Therefore, it is a mammography technique that can obtain conventional 2D images and contrast-enhanced images at the same time.

Due to the characteristics of CEM, there are limitations such as radiation exposure, issues related to contrast agents, workflow and technical constraints, limited availability, and a limited field of view. But CEM offers the following practical advantages compare to magnetic resonance imaging (MRI); shorter examination time, lower cost, higher patient tolerance, easy image interpretation, and comparable cancer detection for many women with newly diagnosed breast cancer, dense breasts, or inconclusive conventional imaging.

Since CEM also effectively visualizes tumor vascularity and enhancing lesions using contrast agents, it is being discussed in comparison with MRI. Background parenchymal enhancement (BPE) on CEM is reported less sensitive than on MRI, and comparison of BPE between CEM and MRI shows moderate to substantial agreement. Compared to MRI, CEM has demonstrated higher specificity and lower false positive rate in breast cancer screening. The potential of CEM as a supplemental screening imaging modality, even for intermediate-risk women, including females with dense breasts and a history of breast cancer. MRI generally remains the reference standard for neoadjuvant treatment monitoring of breast cancer, but CEM has demonstrated similar performance in many clinical settings.

It is necessary to pay attention to the role and usefulness of CEM as a screening test or post-treatment follow-up, in addition to accurate preoperative staging and evaluation of treatment response in patients already diagnosed with breast cancer.

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