CEM: Diagnostic Performance

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Contrast-enhanced mammography (CEM) is a promising technique for breast cancer diagnosis, but high-level evidence about its performance is needed. A systematic review and meta-analysis were performed considering different interpretation methods and clinical settings.[1] The MEDLINE, EMBASE, Web of Science, and Cochrane Library databases were systematically searched up to July 15, 2021. Prospective and retrospective studies evaluating CEM diagnostic performance with histopathology and/or follow-up as the reference standard were included (published up to July 2021). Sixty studies (67 study parts, 11,049 CEM examinations in 10,605 patients) were included. The overall area under the hierarchical summary receiver operating characteristic (HSROC) curve was 0.94. CEM interpretation with both low-energy and recombined images had significantly higher sensitivity and specificity (95% and 81%, respectively) than those with recombined images alone (94% and 71%, respectively). At subgroup analysis, CEM showed a 95% pooled sensitivity and a 78% pooled specificity from nine studies in patients with dense breasts, while in 10 studies on mammography-detected suspicious findings, CEM had a 92% pooled sensitivity and an 84% pooled specificity. CEM showed high performance in breast cancer diagnosis, especially with joint interpretation of low-energy and recombined image. These performances make CEM a real candidate for many clinical indications such as supplemental screening in dense breasts, preoperative staging, characterization of mammography-detected suspicious findings. Although the CEM increase in ionizing radiation dose is low (about 30% higher than that of digital mammography[2], for breast cancer screening of high-risk women (such as those being carriers of deleterious mutations of BRCA1, BRCA2, P53 genes contrast-enhanced magnetic resonance imaging should preferred to CEM.

References:
1. Cozzi A, Magni V, Zanardo M, Schiaffino S, Sardanelli F. Radiology 2022. doi: 10.1148/radiol.211412
2. Gennaro G, Cozzi A, Schiaffino S, Sardanelli F, Caumo F. Cancers (Basel) 2022. doi: 10.3390/cancers14071774

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