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Dynamic Contrast-Enhanced Breast MRI Examinations: Clinical Use and Technical Challenges

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Abstract : Background: Mammography has limited sensitivity and specificity though it is the primary imaging technique for detection of early breast cancer. Ultrasound imaging and contrast-enhanced MRI are useful adjunct tools to mammography. The advantage of breast MRI is high sensitivity for invasive breast cancer. Therefore, indications for and use of breast magnetic resonance imaging have increased over the past decade. Objectives: 1. Cases demonstration on different indications for breast MR imaging. 2. To review of the common artifacts and pitfalls in breast MR imaging. Materials and Methods: This is a retrospective study including all patients underwent dynamic contrast-enhanced breast MRI examination in our centre, performed from Jan 2011 to Dec 2017. The clinical data and radiological images were retrieved from the EPR (electronic patient record), RIS (Radiology Information System) and PACS (Picture Archiving and Communication System). Results and Discussion: Cases including (1) Screening of the contralateral breast in patient with a new breast malignancy (2) Breast augmentation with free injection of unknown foreign materials (3) Finding of axillary adenopathy with an unknown site of primary malignancy (4) Neo-adjuvant chemotherapy: before, during, and after chemotherapy to evaluate treatment response and extent of residual disease prior to operation. Relevant images will be included and illustrated in the presentation. As with other types of MR imaging, there are different artifacts and pitfalls that can potentially limit interpretation of the images. Because of the coils and software specific to breast MR imaging, there are some other technical considerations that are unique to MR imaging of breast regions. Case demonstration images will be available in presentation. Conclusion: Breast MR imaging is a highly sensitive and reasonably specific method for the detection of breast cancer. Adherent to appropriate clinical indications and technical optimization are crucial for achieving satisfactory images for interpretation.

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