The biggest questions in breast screening

Moderation: Aline Hambüchen, Forchheim, Germany

1 The patient in the center: The way forward for women with dense breasts
Panagiotis Kapetas, Vienna, Austria – FFDM & Ultrasound
Pascal Baltzer, Vienna, Austria – Abbreviated MRI protocols

Breast cancer (BC) is a major burden worldwide. It accounts for almost 25 percent of all cancers, and along with lung cancer it’s the main cause of cancer deaths. In organized, population-based programs, mammography screening has proven to be effective at reducing BC mortality. However, BC screening is challenged by a significant rate of metastasized BC and suboptimal interval cancer rates. Women with dense breasts (ACR grade C&D), who comprise 40 to 50 percent of the screening population, represent a large group of women at increased risk of BC for whom there’s an unmet need for improved screening. Various approaches to intensified screening have been investigated. Advances in full-field digital mammography (FFDM) techniques like digital breast tomosynthesis (DBT) and supplemental ultrasound examinations can provide improved cancer detection rates, albeit at the cost of increased recalls. Another approach is contrast-enhanced (CE) imaging that can visualize tumor vessels induced by angiogenesis, and this usually indicates biologically significant cancers. CE-MRI examinations of the breast recently demonstrated a substantial increase in BC detection rates and a decrease in interval cancers in women with dense breasts. A negative CE-MRI in women with false-positive screening recalls has also been shown to successfully preclude unnecessary biopsy. However, CE-MRI is seen as a scarce health resource. In recent years, there have been more and more investigations of alternatives to classical CE-MRI, such as abbreviated and non-contrast approaches. Another potential alternative is contrast-enhanced spectral mammography (CEM), which can be performed along with standard mammography using the same equipment in a single exam.

These twin talks will give the audience a comprehensive overview of the topic.

2 Defining the future role of MRI and CEM in breast radiology
Paola Clauser, Vienna, Austria – CEM perspective
Pietro Panizza, Milan, Italy – MR perspective

Contrast media allows a unique insight into breast cancer pathology and can significantly improve breast lesion characterization and cancer detection, especially in dense breasts. Until recently, contrast-enhanced magnetic resonance imaging (CE-MRI) was the only method that allowed the evaluation of lesion vascularization in the breast. Since its introduction, the use of contrast-enhanced mammography (CEM) rapidly increased in clinical practice, because CEM examinations are faster, easier, and less expensive compared to CE-MRI. Current evidence suggests that CEM can deliver a diagnostic performance comparable to CE-MRI. Current evidence on CEM indications and its current and future role in clinical practice – as an alternative or an addition to CE-MRI – will be presented, and the advantages and disadvantages of CE-MRI and CEM will be discussed.

Learning objectives:
- Review the most recent studies on the indications of CE-MRI of the breast
- Review the current evidence on the acquisition and clinical applications of CEM
- Discuss future perspectives on the use of CEM and CE-MRI in clinical practice
How is image interpretation behaviour changing with 3D and AI?

Ritse Mann, Nijmegen, Netherlands – Radiologist’s perspective
Nico Karssemeijer, Nijmegen, Netherlands – Physicist’s perspective

Digital Breast Tomosynthesis (DBT) is replacing mammography as the baseline imaging technique in clinical practice. AI tools for DBT are commercially available and undergoing constant development. We need to realize that AI is used in DBT for more than just indicating lesions; image reconstruction, noise reduction, and generating synthetic mammograms increasingly employ AI. In Europe, DBT as a screening technique is lagging behind its application in clinical practice. While DBT can reveal lesions that are obscured by over-projecting fibroglandular tissue in mammography, it also dramatically increases the number of images that need to be interpreted. In screening, this may increase radiologists’ workload to an unacceptable level. Strategies for reducing reading time are therefore essential, especially for high-volume practices. AI can play an important role in reducing this workload. Various methods will be discussed, including AI-assisted navigation tools in breast imaging workstations and decision-support systems that accurately identify exams with no suspicious abnormalities. Evidence from studies demonstrating that radiologists supported by AI have smaller workloads and deliver higher accuracy will be reviewed. In addition to screening, AI for DBT is already widely implemented in clinical practice. The current clinical value seems to lie primarily in assessing lesions of limited suspiciousness, and it’s especially valuable for radiologists working alone. However, it may well be that AI will dramatically change the way we interpret DBT examinations in the future.

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