



Breast imaging in Slovenia

An interview with Dr. Maja Marolt Mušič, head of the Department of Radiology at the Institute of Oncology in Ljubljana, Slovenia and President of the Slovenian Association of Radiology.

European Society of Radiology: *Breast imaging is widely known for its role in the detection of breast cancer. Could you please briefly outline the advantages and disadvantages of the various modalities used in this regard?*

Maja Marolt Mušič: Mammography is the most commonly used modality in Slovenia for the detection of un-palpable breast cancer in women older than 40 years. Mammography is highly sensitive, relatively cheap and affordable. It can be used to successfully detect microcalcifications, an early sign of intraductal carcinoma. In recent years, almost all mammography units in Slovenia have been replaced by digital equipment. Unfortunately mammographic sensitivity for detection of small cancers depends on the amount of glandular tissue in the breast. In women with dense breast tissue, this method is less efficient. In these women we additionally use tomosynthesis or ultrasound. Ultrasound of the breast is performed as an additional examination secondary to mammography or as the primary modality in women younger than 40. Ultrasound exams are operator dependent and less sensitive in fatty breasts. We also use it to perform ultrasound-guided breast interventions. Breast magnetic resonance imaging (MRI) has higher sensitivity than mammography, but unfortunately lower specificity. It is also a time consuming and expensive procedure, which requires the injection of an intravenous contrast agent. The main indications for MRI are: screening of high-risk women, monitoring of effect of neoadjuvant chemotherapy, searching for a possible breast cancer in patients with axillary metastases, or as a problem solving tool.

ESR: *Early detection of breast cancer is the most important issue for reducing mortality, which is one reason for large-scale screening programmes. What kind of programmes are in place in your country and where do you see the advantages and possible disadvantages?*

MMM: In Slovenia we have a nation-based screening programme for early detection of breast cancer, named DORA. We started in 2008. More than 60% of eligible women are already included. We expect to cover the whole population by 2018. Women aged 50 to 69 are invited every two years to mammography by letter. The most important advantage of this programme is early detection of small, non-palpable cancers and consequently less treatment and the long-term reduction of breast cancer mortality. The main disadvantage is overdiagnosis.

ESR: *Do you know how many women take part (percentage) in screening programmes in Slovenia? Do patients have to pay for this?*

MMM: The attendance rate for our screening programme is over 78%. The programme is free of charge.

ESR: *The most common method for breast examination is mammography. When detecting a possible malignancy, which steps are taken next? Are other modalities used for confirmation?*

MMM: Work-up of suspicious lesions detected on mammography usually includes an additional x-ray magnification view for microcalcifications. In cases of solid lesions, tomosynthesis and ultrasound examinations are performed, followed by ultrasound-guided biopsy. In cases of suspicious microcalcifications, we perform stereotactic vacuum-assisted breast biopsy. If necessary we also use breast MR and MR-guided biopsy.

ESR: *Diagnosing disease might be the best-known use of imaging, but how can imaging be employed in other stages of breast disease management?*

MMM: In addition to diagnostic purposes, different breast imaging modalities are used also for preoperative staging of breast cancer (ultrasound of axillae, MR for detection of additional foci); MR is used to monitor the effect of preoperative neoadjuvant chemotherapy; ultrasound or stereotactical devices are used to mark (localise) un-palpable breast cancers for the surgeon to operate on; and mammography, ultrasound or MR are used for regular checking of disease recurrences in the breast.

ESR: *What should patients keep in mind before undergoing an imaging exam? Do patients undergoing radiological exams generally experience any discomfort?*

MMM: Women should be aware that mammography can cause short-term discomfort because of the compression of the breast, but fortunately it only takes less than half a minute. Before starting mammography they should be relaxed as much as possible. The most appropriate time for mammography is the second week of the menstrual cycle – in this period the compression is least painful. Strong compression is necessary in order for pathological changes in the breast to be better displayed. Some patients also worry about the radiation dose received during mammography. It is important to stress that mammography is a low dose exam and the radiation exposure is comparable to the background dose from natural sources that the average person is exposed to in a couple of weeks.

Breast MR exams can also cause some problems because some women experience feelings of claustrophobia once they are in the narrow tunnel of the machine.

ESR: *How do radiologists' interpretations help in reaching a diagnosis? What kind of safeguards help to avoid mistakes in image interpretation and ensure consistency?*

MMM: Interpretation of mammography is one of the most difficult challenges and requires a highly skilled radiologist. Before starting mammography reading, the radiologist must undergo theoretical and practical training. A large number of mammograms must be read each year in order to gain experience and maintain a high level. In screening, all mammograms are read by two radiologists independently. For all radiologists involved in screening, recall rate, sensitivity and specificity are regularly monitored. An annual overview of all interval cancers is strongly recommended.

ESR: *When detecting a malignancy, how is the patient usually informed and by whom?*

MMM: The patient is usually informed personally either by the referring physician or by the radiologist who performed the diagnostic examination.

ESR: *Some imaging technology, such as x-ray and CT, uses ionising radiation. How do the risks associated with radiation exposure compare with the benefits? How can patient safety be ensured when using these modalities?*

MMM: As radiological professionals we are obliged to take all safety precautions in order to keep the patient dose as low as possible. Our equipment is under continuous quality control. It is also mandatory to protect reproductive organs if they are not the subject of the examination. We always use the lowest radiation dose possible to achieve a diagnostic result.

ESR: *How aware are patients of the risks of radiation exposure? How do you address the issue with them?*

MMM: Most people are afraid of the radiation they will receive from an x-ray examination; some even reject the proposed exam. We often discuss the risks and benefits of an exam with the patient and try to explain why it is necessary. It is important to emphasise the benefit of the possible detection of a small cancer with mammography.

ESR: *How much interaction do you usually have with your patients? Could this be improved and, if yes, how?*

MMM: In screening, the women meet the radiologist only if additional assessment is necessary, in 4% of all cases. All other women have contact only with the radiographer who performs the mammography. It is obligatory for the radiographer to explain the whole procedure to the women and answer her potential questions. Before other examinations I try to take time for every patient and explain to her the importance of the examination.

***ESR:** How do you think breast imaging will evolve over the next decade and how will this change patient care? How involved are radiologists in these developments and what other physicians are involved in the process?*

MMM: I believe that in the future the impact of MR on the detection of breast cancer will increase, although mammography will keep playing an important role in early breast cancer diagnosis. In countries with higher incomes, MR examination might even replace screening mammography. I believe radiologists will keep the leading role in the early detection of un-palpable breast cancer.

Maja Marolt Mušič, MD, PhD is a board certified radiologist and has spent her career at the Institute of Oncology in Ljubljana, where she has been Head of the Department of Radiology since 2007. She is also a leading radiologist in the Slovenian breast cancer screening programme and Assistant Professor at the medical faculty in Ljubljana. Her main areas of interest include breast and oncological imaging. She has organised breast imaging schools in Ljubljana and co-authored more than 200 peer-reviewed papers. She is president of the Slovenian Association of Radiology.