



## **Breast imaging in Slovakia**

**An interview with Dr. Viera Lehotská, Associate Professor and Head of the 2<sup>nd</sup> Radiology Department of the Faculty of Medicine Comenius University and St. Elizabeth's Cancer Institute, Bratislava, Slovakia.**

**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?*

**Viera Lehotská:** Mammography, including recent trends (e.g. tomosynthesis), is considered to be an essential, highly sensitive and representative method in the diagnostics of non-palpable breast lesions, especially those with the presence of microcalcifications. Based on this fact, mammography is generally accepted as the only proper method for active detection of breast cancer in the screening process. One disadvantage is the use of ionising radiation, and some patients might also consider the need for breast compression during imaging another disadvantage. But its contribution to the diagnosis of early stages of breast cancer significantly outweighs these limitations.

Ultrasound examination of the breast and the axilla serves as the main complementary method to mammography: for differentiation between cystic and solid lesions as well as for the elimination of occult lesions in dense breast glands. For younger women (under 40), pregnant women, or women during lactation, as well as for women with inflammatory breast disease or impaired mammary implants, ultrasound is used as the first choice examination method. Its benefit is not only its low cost but also its repeatability and non-risk character. Together with newer trends such as US-elastography and contrast-enhanced ultrasound (CEUS), it contributes to the assessment of lesions dignity (whether it is benign or malignant). It is very helpful in the follow-up of operated and irradiated breast and is therefore an important part of the monitoring of patients after surgery for breast cancer.

MR-mammography has strictly defined indications, which, if they are kept to, makes it a robust method. It has high sensitivity in the diagnosis of invasive breast carcinoma. Its specificity can be increased by using functional MRI methods such as diffusion-weighted imaging (DWI) and dynamic contrast-enhanced (DCE) MRI, and MR-spectroscopy. In addition, its potential is not only in the assessment of the extent of breast cancer (multiplicity, etc.) or in the assessment of early response to neoadjuvant chemotherapy, but also in its high sensitivity in high risk groups.

Interventional methods also play a very important role, whether under the MG-stereotactic, ultrasound or MR-navigation. Preoperative histologisation of breast lesions by standard vacuum-assisted biopsy or by the Intact BLES (Breast Lesion Excision System) is an indispensable part of the exact diagnosis of the character of breast lesions. Similarly, image-guided localisation techniques enable effective surgical treatment of breast cancer.

**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?*

**VL:** In the Slovak Republic we follow the laws, government regulations and professional guidelines regarding healthcare. These determine mammography as a screening method for every woman aged from 40 to 69. In Slovakia we see the disadvantage in the fact that this activity lacks a central invitation system, as well as data collection and further evaluation. Nowadays women are referred to preventive mammography by gynaecologists, breast specialists or by general practitioners. Mammography is performed within a specialised breast care unit, evaluated by double reading, and

if necessary, followed by breast ultrasound and other procedures, including MRI and breast biopsies. The statistical analysis of patients, diagnoses and the procedures used is performed internally by the breast care unit but without any centrally processed statistical output. All new cases of breast cancer are reported in the form of oncologic reports to the register administered by the Institute of Health Informatics and Statistics. The Slovak Radiological Society is fully aware of this deficiency. This is why it is taking the initiative of implementing MR-mammography breast cancer screening for high-risk women, starting in 2017. The project will be implemented in cooperation with the Slovak Society of Medical Genetics and with the support of other medical specialists.

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

**VL:** As mentioned above, the preventive care programme is defined by law, but without any central data evaluation. The participation of Slovak women in the preventive mammographic programme strongly depends on the region, level of education and the women's health awareness. In the capital and in other urban areas, participation in preventive mammography is estimated at 70%, but in the countryside it hardly reaches 20–25%. Healthcare in Slovakia is fully covered by public health insurance. This means that participation in a preventive mammography programme is covered by health insurance companies and the client/patient does not pay anything.

**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?*

**VL:** In cases where there are suspicious mammographic findings, the patient is given a breast ultrasound examination, followed by core-cut biopsy or vacuum-assisted biopsy if necessary. Where multiplicity is suspected, or sometimes in patients with dense breast tissue, preoperative MR mammography is performed. This method can be used to assess the real extent of pathological changes in the breast, the presence of multiplicity, or bilaterality. If MRI reveals new suspicious changes that were previously undetected, we carry out a 'second-look' ultrasound examination (which can reveal 60–80% of lesions detected with MRI) with subsequent biopsy. If the changes remain occult with ultrasound and mammography, we can perform biopsy under MRI guidance. Prior to surgery, each patient with a confirmed malignant breast lesion undergoes a staging CT scan of the chest, abdomen and pelvis. The aim is to reveal potential distant metastases or other serious comorbidity. The management is completed by the evaluation of laboratory parameters, mainly oncomarker levels in the blood and genetics.

Before surgery we perform image-guided localisation of changes in the breast.

Patients requiring special management are discussed by a professional multidisciplinary breast committee, which will decide on individualised, 'tailored' patient treatment.

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

**VL:** Here it is necessary to mention the role of diagnostic imaging in the previously operated or irradiated breast, as well as during follow-up (after chemotherapy and hormonal therapy). The aim is to assess the development of reparative changes in the breast, as well as to exclude or confirm local recurrence after treatment. When applying neoadjuvant chemotherapy, it is very important to monitor the effects of treatment and the level of response. MR-mammography makes an outstanding contribution here, as functional imaging enables assessment of therapeutic response in a very short time period after chemotherapy. Similarly, if the patient has advanced disease, imaging methods allow us to evaluate the extent of the disease, monitor treatment, and follow up.

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

**VL:** Patients should be informed about the character and potential risks of the selected imaging method, especially about its benefits and contribution to the diagnostic process. On the other side, the patient also needs to know about side effects, potential allergic reactions and other

complications that might occur during the examination. Some patients perceive the compression during mammography or the noise and confinement during MR examinations as very uncomfortable. I believe that clear and proper explanation of the reasons for such discomfort makes the patient more compliant and able to cope with those issues during the examination.

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

**VL:** The correct interpretation of images by radiologists plays a key role in the diagnostic management of patients. The radiologist should know not only the signs and symptoms of the disease but also all of the patient's relevant laboratory results in order to interpret the images in relation to the clinical status. In this context, double reading and the opportunity to consult a colleague – radiologist or clinician – are of high importance. The cross-referencing of data in HIS via RIS and PACS, and access to older documentation and previous clinical and laboratory parameters are also important.

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

**VL:** The patient usually learns their definitive diagnosis and the prognosis when receiving the histological result from the biopsy material. The diagnosis is usually given by a physician or a specialist who takes care of the patient. Even radiologists may be tasked with informing the patient of the diagnosis in certain cases, usually when the result of a histological examination needs to be correlated with imaging findings and when the radiologist is summarising findings. Very often the patient asks for a consultation with the radiologist who performed the biopsy or who evaluated the patient's examinations.

**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?*

**VL:** Despite their use of ionising radiation, mammography and CT are the most commonly used methods in the diagnosis of breast cancer or cancer in general, due to their diagnostic performance. It is important to follow the principles of ALARA (As Low As Reasonably Achievable), and to ensure the correct indication and the effective performance of both methods, using protective equipment available for this purpose. It is necessary to record the dose and exposure parameters, to carry out long-term stability testing of equipment and to avoid unnecessary repetition of tests.

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

**VL:** Sometimes we meet with patients who refuse mammography, usually due to alarming unprofessional reports published on web or in other media. However, we are able to convince the majority of patients with evidence-based arguments and by explaining the necessity and benefits of the examination. A remaining smaller group of patients, despite the explanation, continue to refuse mammography anyway. Those patients are asked to sign an acknowledgment form with a list of all the risks that this attitude entails.

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

**VL:** Interaction with the patient depends on the indication, on the type of modality and the necessity for communication between the patient and the physician or specialist. For diagnostic modalities (diagnostic mammography, ultrasound or biopsies), contact between doctor and patient is usual. In the case of some preventive examination methods, such as screening mammography, we use a questionnaire, which, when carefully filled in, is very helpful. In our practice this has been proven to be a really effective method.

**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?*

**VL:** In my opinion, the development will move towards functional imaging with the implementation of an increasingly wide range of biomarkers. I see imaging as crucial, since modern technologies allow non-invasive diagnosis. These methods are less stressful for the patient and have a valuable predictive potential. The aim is to diagnose the disease in its very early stages, which results in a better prognosis for the patient.

The multidisciplinary approach improves the quality of diagnostics and further management of the patient. Applied treatment based on the very early and exact diagnostics allows the quality of life of the patient to be preserved, as well as their early return to family and normal social life.

**Viera Lehotská, MD, PhD** is board certified in three subjects: radiology, breast imaging, and management and financing of healthcare. She has spent her academic career at the Faculty of Medicine Comenius University in Bratislava and acts as Head of the 2<sup>nd</sup> Radiology Department of the Faculty of Medicine Comenius University and St. Elizabeth's Cancer Institute, Bratislava, Slovakia. As associate professor of both radiology and public health, her main interests include imaging in oncology, with a focus on breast diagnostics and interventions and on radiation protection and safety of imaging. She leads a specialised centre for differential diagnostics of atypical breast lesions and breast interventions, created by the Slovak Ministry of Health. She is the current president of the Slovak Radiological Society. She has authored more than 120 peer-reviewed publications, invited chapters and articles. She has participated in several study stays and professional visits in the Czech Republic, Austria, Hungary, Sweden and the USA.

