



Breast imaging in Poland

An interview with Dr. Elżbieta Łuczyńska, a researcher and lecturer at the Skłodowska-Curie Oncology Centre, head of the Radiology and Image Diagnostics Department at the Oncology Centre in Kraków, and head of the Breast Imaging Section of the Polish Medical Society 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?*

Elżbieta Łuczyńska: Mammography is the first method used for breast cancer detection. Due to its repeatability, mammography is a primary method used in screening studies. The sensitivity and specificity of mammography is limited and depends on breast anatomy. In fatty breasts the number of detected cancers is big, but the number decreases in breasts with dense and dispersed anatomy. According to the literature, data sensitivity of mammography is 62.9 % for very dense breasts and 87 % for fatty breasts; while the specificity of mammography is 89.1% for very dense breasts and 96.9 % for fatty breasts. About 50% of women presenting for mammography examinations have glandular breast anatomy, which makes cancer detection more difficult, due to the similar levels of x-ray absorption of cancer and glandular tissue.

Due to these limitations, new imaging methods are being researched. One of them is breast ultrasound, a popular and easily available examination in Poland. In order to diagnose the lesions well in ultrasound, the examination should be performed after mammography and under mammography guidance. Ultrasound sensitivity is lower in fatty breasts. It is important to remember, that ultrasound is a subjective examination and its efficiency depends on the doctor's experience and quality of equipment. Nevertheless, a lot of focal lesions are diagnosed using ultrasound. A lot of procedures can also be performed under ultrasound guidance, such as fine needle biopsy, core needle biopsy and vacuum-assisted needle biopsy.

Another imaging method, which is gaining more and more popularity in Poland, is MRI. This examination is performed in many clinics in order to exclude multifocality and multicentricity of neoplastic processes. MRI is also performed in cases of women with a genetic predisposition to cancer. In a few clinics in Poland needle biopsy is performed under MRI guidance. MRI is still not commonly available and is an expensive examination, and biopsy under MRI is not refunded by the Polish National Health Foundation (NFZ).

Spectral mammography (CESM) after intravenous contrast administration is also available in some Polish clinics. I have had spectral mammography in my centre since 2011 and we have performed a lot of examinations, and on the basis of my own experience I can say that this method is comparable with MRI.¹ However, there are not many spectral mammography installations in Poland and availability of this method is poor.

Breast tomosynthesis is also becoming an increasingly popular imaging method in Poland. Last year there were a few new installations in Polish clinics. This method is complementary to 2D mammography both in clinical examinations and screening studies. Tomosynthesis is considered a very good tool for the confirmation or exclusion of focal lesions in dense glandular breasts and in breasts with dispersed glandular-fatty anatomy. Availability of this method is slightly better than CESM; however, the amount of tomosynthesis equipment in Poland is still limited.

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?*

Et: In Poland, breast cancer screening has been carried out for ten years. This programme is financed by the NFZ. One of the advantages of this programme is that it is free for the patients – all women aged 50 to 69. The examinations are performed every second year, and for women who have a family history of breast cancer (grandmother, mother, aunt, sister) it is performed every year. In my opinion, screening studies in Poland are scattered, which means the number of clinics performing the examinations within certain cities is too large. What is more, there are no mammography centres in some areas, which are necessary for supervising the whole study. Recently, ‘mammobuses’ have gained popularity – portable digitalised mammography stations, which move around the whole country, offering a much worse quality of equipment than is available in stationary clinics. Another problem is a lack of regularity in sending invitations for the examination, which results in a small number of patients presenting for the study.

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

Et: The number of patients presenting for the screening study is different in different areas of the country (provinces). The mean rate of patients presenting for mammography examinations within screening studies is 42%, and ranges from 36% to 51%. Screening examinations are 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?*

Et: If a cancer is detected in mammography, the first complementary examination to be performed is ultrasound. If the lesion is further visible in ultrasound, core needle biopsy or vacuum-assisted biopsy (VABB) is performed under ultrasound-guidance in order to confirm the lesion’s presence in a histopathological examination. If the lesion is manifested by microcalcifications, VABB is performed under mammography guidance. If the lesion is suspicious of being a multifocal or multicentric cancer, MRI or CESM is performed. After these examinations the patient undergoes retrospective ultrasound. If lesions are visible on ultrasound, verification is carried out under ultrasound. In the opposite situation, if the lesions are not visible with ultrasound, VABB is performed under MRI or mammography.

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

Et: Imaging is used not only in the initial process of breast cancer diagnosis, but also in patients after breast cancer treatment – for mastectomy and breast conserving therapy (BCT). The patients regularly undergo mammography, ultrasound and, in suspicious cases, also MRI and CESM. Besides, these patients periodically undergo ultrasound examinations of the abdominal cavity and chest x-rays to exclude the possibility of metastasis. In patients with metastasis, periodical imaging examinations are performed to monitor changes taking place during chemotherapy. Other examinations include chest and abdominal CT, and whole-body MRI for early detection of bone metastasis.

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

Et: Before undergoing mammography, the patient should be aware of the pressure that will be applied. The patient should be informed by a technician performing the examination. Unfortunately, it sometimes happens that the patient is not informed. Before an MRI examination, patients are informed about the duration of the procedure and that they must remain in the prone position during the examination. Before biopsy, the patient is asked about possible allergies to an anaesthetic medium. Despite being provided with the information regarding the biopsy procedure, the patients tend to experience stress and discomfort. Moreover, the patients are anxious about the results of the histopathological examination and stressed out by the fact of having a lesion in their breast, which increases the discomfort of the examination itself.

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

EŁ: Radiologist's interpretations are of great importance when it comes to diagnosis. In my clinic, as well as in many other Polish centres, the lesions are described according to BI-RADS classification. Using a standardised classification helps the cooperation between radiologists and clinicians a lot and helps to ensure consistency.

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

EŁ: If the detected lesion is histopathologically confirmed as malignant, the patient is most often informed by an oncologist or oncology surgeon. Any information about a radiologically suspicious lesion and the necessity of verification is provided by a radiologist.

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?*

EŁ: Screening studies allow for early breast cancer detection, and also early treatment. Thanks to these examinations, the patients who have surgery often have a lower grade of cancer, which also decreases the cost of treatment.

Regarding patient safety, we apply physical protection for gonads, thyroid gland and eyes. CT is performed only if the patient has a referral including indications for a particular examination from a clinician. In case of follow-up CT examinations, in order to decrease the radiation dose, they are frequently performed only using contrast agents, which enhance the diagnostic image so that less radiation is required.

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

EŁ: In my opinion patients' awareness considering the risks of radiation exposure is quite high. Very often after CT exams the patients ask if they may undergo other examinations that use ionising radiation and what time interval should be appropriate between examinations. This information is provided by general practitioners, clinicians and radiologists. The patient should receive information about the purpose and advantages of the examination performed. Every patient is informed about the use of ionising radiation before mammography. A note including this information is also placed on the front door of the mammography room.

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

EŁ: Doctors dealing with mammography and extended diagnostics have interaction with the patients. The radiologist decides which examinations should be performed within extended diagnostics. The doctor performs ultrasound and biopsies himself. Core needle biopsy is performed by radiologists, as well as VABB under ultrasound, mammography or MRI guidance. Sometimes, the surgeon performs biopsy (VABB) with ultrasound guidance.

We, as radiologists also insert localisation wires under guidance with mammography, ultrasound and MRI. Radiologists check the samples after the operation (the x-ray is taken by a technician) and ultrasound of the sample is done by a radiologist, who also confirms the correct excision of the lesion including operative margins. There is close cooperation between the surgeon and radiologist. After treatment the patients are checked by radiologists.

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?*

EŁ: In my opinion, mammography will remain the basic method in breast cancer diagnostics. Probably, classical mammography in screening studies will be replaced with tomosynthesis. The studies aimed at decreasing the radiation dose in mammography will be continued. I also consider

CESM a very promising method, which will be able to replace MRI for patients with suspected breast cancer, to exclude multicentricity and multifocality, if the radiation dose can be decreased. MRI will be particularly useful in cases of patients with a genetic predisposition, and shortening the duration of the examination should increase the number of examinations carried out.

1 Łuczyńska E., Heinze-Paluchowska S., Hendrick E., Dyczek S., Ryś J., Blecharz P., Herman K. Jakubowicz J. Comparison between breast MRI and contrast enhanced spectral mammography (CESM) Med Sci Monit 2015;12;21:1358-670

Dr. Elżbieta Łuczyńska holds a Diploma in Medical Sciences from the Collegium Medicum, Jagiellonian University Kraków, and a PhD in breast cancer imaging. She is a 2nd degree specialist and consultant in Radiology and Imaging Diagnostics and is employed as a researcher and lecturer at the Skłodowska-Curie Oncology Centre, Kraków Department, where she is also head of the Radiology and Image Diagnostics Department. She is an author and co-author of 54 publications including two publications about perfusion in prostate cancer and breast cancer (last publication about CESM). She is also a co-author of 15 books, 18 reports presented during international conferences, and 96 reports and lectures presented during national conferences. Since 2000 she has been a member of the European Society of Radiology. She has delivered invited lectures in Florence and Berlin pertaining to CESM.

