



Breast imaging in Turkey

An interview with Prof. Gul Esen, member of the academic faculty of Acibadem University in Istanbul, guest lecturer at Koc University, and Chair of the Turkish Radiological Society's breast imaging working group.

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?*

Gul Esen: Mammography is the primary imaging modality for the detection of breast cancer. It is a low cost, fast and easily accessible technique. Mammographic screening has been shown to reduce breast cancer mortality by 25–30%. It is very efficient in fatty breasts, but its sensitivity and specificity decreases very much in dense breasts.

On the other hand, ultrasound is more sensitive in dense breasts, compared to fatty breasts. It can effectively detect small invasive cancers in dense breasts. Ultrasound is a cross sectional imaging method, which enables us to evaluate the internal structures and margins of lesions easily. Another important advantage is that it does not use ionising radiation. The main disadvantages of ultrasound are that it takes up too much time, it is a very operator dependent modality, and its positive predictive value is low. These disadvantages make it difficult to use it in screening.

Among all breast imaging methods, MRI has the highest sensitivity. However, it necessitates contrast injection and it is quite expensive. Therefore, MRI is mostly reserved for the screening of very high risk patients and for problem solving purposes.

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?*

GE: In Turkey, we do not yet have a population based screening programme that covers the whole country. For almost ten years we have had pilot screening programmes in all our cities, through one or two cancer screening centres per city, called KETEM. These centres screen for cervical cancer and breast cancer. Women are invited by mail to these centres every two years, starting from age 40. Last year all centres were equipped with digital mammography machines and also mobile units were added. The images are sent to a centralised reading centre that is established in Ankara. In this centre, mammographies are double read by experienced breast radiologists. BI-RADS 0, 4, and 5 cases are sent to second line hospitals equipped to perform further work up, diagnosis and therapy if needed.

Although it is good that the government is aware of the importance of breast cancer as a health issue, we need to have a more organised, well planned programme that gives priority to quality control and covers the entire population, in order to reduce breast cancer mortality in Turkey. The Turkish Society of Radiology is collaborating with the Turkish Ministry of Health to achieve this important goal.

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

GE: The existing screening programme covers around 30% of the population in Turkey. In these centres, mammography screening and cervical screening are performed free of charge. There are also some screening centres that have been established by the municipalities in some cities, and by some private non-profit organisations. These services are also free of charge. Additionally, breast

cancer awareness is very high in Turkey, and there is a considerably high percentage of opportunistic screening. Mostly, women pay for this themselves. Because of this disorganised system, it is difficult to know the exact percentage of the population that undergoes regular screening. There is no special screening programme for high risk patients.

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?*

GE: In Turkey, ultrasound is widely used as an adjunct to mammography in dense breasts (type B–D). Most breast radiologists are very experienced in breast ultrasound, and we detect many early stage invasive cancers with ultrasound. When a suspicious lesion is detected by mammography or ultrasound, the patient undergoes needle biopsy. Core needle biopsy is performed for lesions detected by ultrasound, and stereotactic vacuum assisted biopsy is used for lesions detected only by mammography. Although core needle biopsy is widely performed, vacuum assisted biopsy is only available in centres that have more experience of performing it. The patients are either referred to these centres, or undergo excisional biopsy after needle localisation, if referral is not possible. MRI is mostly used in patients with a diagnosis of breast cancer, for preoperative staging. MRI is also used for problem solving purposes if needed, for the follow-up of neoadjuvant chemotherapy, for screening of high risk patients and for patients with breast implants. When a suspicious lesion is detected only by MRI, a second look ultrasound examination is always performed. MRI-guided vacuum assisted biopsies are needed only if the lesion cannot be found on other modalities. These biopsies are performed only in some specialised centres, which have the necessary equipment.

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

GE: Imaging is needed in all stages of breast cancer. For locally advanced disease, the standard therapy is usually neoadjuvant chemotherapy. Mammography and ultrasound may not be very accurate for determining the extent of disease. However, MRI is a very efficient technique in these patients, for assessing disease extent before therapy, for monitoring therapy, for the early assessment of the effectiveness of therapy and for the assessment of residual disease at the end of the therapy, thus acting as a guide for the whole multidisciplinary breast team taking care of the patient. For patients who present with axillary metastases, breast imaging is necessary to detect the primary focus in the breast, if there is one. Treated patients need to be under regular yearly follow up for the treated as well as the contralateral breast. Finally, in patients with systemic metastases, imaging modalities are needed to diagnose these metastatic foci, as well as to monitor therapy. Interventional therapeutic procedures may also sometimes be needed in metastatic patients.

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

GE: Mammography is a diagnostic method that uses ionising radiation. However, the radiation dose is actually as low as we get from a six-hour flight. Therefore, there is no need to be afraid of radiation. During the examination the patient might feel some pressure on their breasts; however, they should know that this is essential if we want to get high quality and low dose images. The discomfort they might feel would be less if they have their mammograms taken in the second week of the menstrual cycle. Ultrasound is performed using a coupling gel, and does not usually lead to any discomfort. MRI is performed using closed scanners, which may cause some anxiety in a small percentage of patients.

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

GE: The experience of the radiologist is very important for early diagnosis of breast cancer. Radiologists who specialise in breast imaging and who read high volumes of examinations are more successful in reaching correct diagnoses. Other factors that contribute to the success of breast imaging are double reading of mammograms, being experienced in all breast imaging methods as

well as interventional procedures, and working together with a multidisciplinary team. Integrating all imaging findings with clinical risk factors is important for good practice. Achieving high sensitivity and high positive predictive value with a low recall rate should be the aim in every breast imaging centre, and this can only be possible with strictly controlled quality assurance programmes.

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

GE: Either radiologists (especially if they have performed a biopsy) or surgeons inform the patients; mostly by discussing the findings and pathology results with them face to face.

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?*

GE: Some radiological methods use ionising radiation, and of course ionising radiation should be used with caution. The radiation dose in x-rays is usually very low and should not be a cause for concern. Mammography is also a type of x-ray examination; however, because it is performed regularly, its cumulative effect may be significant. Mammographic screening has been shown to decrease breast cancer mortality through early detection. Compared to this benefit, the risk from radiation in mammography is negligible. Patients receive higher doses of radiation in CT examinations, compared to x-rays.

Imaging methods are all very essential and indispensable in the detection, diagnosis and management of diseases. Modern medicine depends very much on imaging technology. Radiologists as well as all clinicians should make sure that these examinations are performed for correct indications and with the lowest doses possible. Radiation doses should be strictly regulated for paediatric patients.

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

GE: Patients are informed about the risks and benefits of the radiological procedures through the informed consent forms they sign before the examinations.

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

GE: Breast radiologists have a lot of interaction with their patients. Ultrasound examinations and interventional procedures are performed by radiologists themselves. Therefore we have a chance to get to know each other and discuss the imaging findings as well as the results together. It is one of the rare fields in radiology where the radiologist may be the primary physician for the patient. Interaction between the radiologist and the patient is important for building trust and cooperation. Patients should feel free to contact their radiologist with any questions or concerns they may have, and radiologists should not hesitate to contact their patients when they need additional information or when they need to convey urgent findings.

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?*

GE: Breast imaging is a very active area of research, probably because we deal with large volumes of patients, most of whom are healthy. In order to increase the sensitivity and specificity of imaging modalities, and in order to effectively diagnose breast cancer as early as possible, new technologies are being developed and current ones are being refined. Breast radiologists have to be involved with these developments in order to make sure we can provide a state-of-the-art service. In the future, I hope that we will have a chance to differentiate patients with moderate to high risk from those with very low risk more accurately by blood tests or genetic tests and apply personalised screening strategies.



Dr. Gul Esen completed her radiology education in Istanbul University, Cerrahpasa Medical School and received her professor degree from the same faculty, where she also worked as the head of breast imaging section for 15 years. Currently she is a member of the academic faculty of Acibadem University in Istanbul, and is also a guest lecturer at Koc University. She has served on the executive committee of the European Society of Radiology (EUSOBI) and she currently chairs the Turkish Radiological Society's breast imaging working group. She is the author or co-author of more than 100 peer-reviewed articles (including 18 book chapters), and 90 conference abstracts on breast imaging. She has been involved in many national and international scientific meetings as an organiser and giving more than 100 invited lectures. She is one of the pioneers in the fields of breast MRI and minimally invasive interventional breast procedures in Turkey.