

International Day of Radiology 2014
Interview on brain imaging
Israel / Dr. Chen Hoffmann



**INTERNATIONAL
DAY OF
RADIOLOGY**
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The ESR spoke to Chen Hoffmann, head of neuroradiology and paediatric & foetal neuroimaging at Sheba Medical Centre, Tel Hashomer in Israel, about the importance of patient contact for radiologists and the role of brain imaging in Israel.

European Society of Radiology: Imaging is known for its ability to detect and diagnose diseases. What kind of brain diseases can imaging help to detect and diagnose?

Chen Hoffmann: Diseases affecting the central nervous system can cause neurological symptoms, but unlike other parts of the body the physical examination is not directed at the organ causing the symptoms (the brain or spine), as for example in the skeletal system. Therefore, imaging is necessary to make the diagnosis. Computed tomography (CT) and magnetic resonance imaging (MRI) are the most important tools we work with. Both can detect diseases affecting the brain due to vascular impairment, tumours, and infectious diseases. Malformations of the brain can also be detected, including inherited diseases of the brain.

ESR: How useful is imaging in brain disease management? Does it improve the understanding of disease or improve patient prognosis?

CH: Today, imaging of the brain is the most important tool in the planning of treatment and prevention of neurological diseases. It is the MRI scan that allows the surgical excision of a brain tumour. MRI is also the most important tool in the diagnosis of brain malformations in the paediatric and foetal population. Better diagnosis can prevent further generations from suffering inherited diseases. CT is extremely important in the diagnosis of trauma to the head and spine, guiding the immediate and long-term therapy of the injured skull and spine.

ESR: What kind of technology and techniques do radiologists use to image the brain? Are there any specific techniques for particular diseases?

CH: The equipment used in radiology today is MRI, CT and angiography. Each of them has advantages and disadvantages, for example MRI can detect acute stroke within a few minutes of the onset, while CT can only show the stroke after a few hours, even after 24 hours. It is important, because the treatment can avoid the damage to the brain only after three to four hours.

ESR: What is the difference between a radiologist and a radiographer? Who else is involved in performing brain imaging exams?

CH: The radiologist is a doctor who does an internship of three to five years after medical school. A radiographer is a technician with university training on how to perform the radiological examinations. It is the radiographer who does the MR scan or CT scan, while the radiologist plans the scan and, of course, reports it.

ESR: How many patients undergo brain imaging exams in your country each year?

CH: An estimated 300,000 brain CTs and 150,000 brain MRIs are performed in Israel each year.

ESR: Access to modern imaging equipment is important for brain imaging. Are hospitals in your country equipped to provide the necessary exams?

CH: Every hospital in Israel has at least one CT scanner, the referral hospitals have more; one to two scanners in the radiological department and one in the emergency room. Over the past few years a process of purchasing MRI scanners for every hospital has been started, so every hospital will have an MRI machine within the next two years.

ESR: In many countries there are waiting lists for MRI exams. How long can patients typically expect to wait for an exam in your country?

CH: The waiting list for an MRI scan is one to three months, depending on the location of the patient and the type of MRI scan.

ESR: As the global population gets older, the risk of developing neurocognitive and neurodegenerative disorders increases. How can imaging help tackle this issue?

CH: Imaging has an important role in the detection of neurodegenerative diseases. The role can be negative, to exclude treatable conditions, or positive, to diagnose others. Current research is focusing on volumetric measurements of the brain and finding specific anatomical landmarks for the early detection of dementia and other neurodegenerative diseases, in order to find early treatment for them.

ESR: Some imaging techniques, like x-ray and CT, use ionising radiation. What risk does this radiation pose to the patient and what kind of safety measures are in place to protect the patient?

CH: Ionising radiation can increase the risk of cancer. Knowing that, the Israeli Ministry of Health published a decision not to perform CT scans on the paediatric population, unless it is better indicated that an MRI scan or if a life-threatening condition requires it. A lot is done nowadays to develop new CT scanners that use less energy and radiation. This equipment should be released on the market soon.

ESR: In general, patients don't see the radiologist. A patient will discuss the image with the neurologist, neurosurgeon or oncologist. When they ask a question, they're often told: "I'm not a radiologist". Why don't radiologists discuss the image with the patient first?

CH: I totally agree. The role of the radiologist is to report the scan, but it is even more important to let the patient understand his/her own medical situation. It is the shortage of radiologists and a lack of positions for radiologists that make us invisible to the patients. I do foetal MRI in my hospital. One of my favourite tasks is to speak to the parents before the scan and explain the report afterwards. However, it is sometimes unpleasant to let parents know that there are abnormalities with their pregnancy and help them decide what to do next.

ESR: How expensive are radiological examinations to the health service and is there a risk that some of these examinations could be blocked by health technology assessment agencies deeming them to be not cost-effective? If so, how can patients help to ensure that these examinations are made available?

CH: The equipment is very expensive and so are the running costs. The administrative team is always trying to reduce costs and block the new developments in the interests of the budget. I recommend that everyone get private insurance, which can help the individual when it is necessary to do everything for his or her health.