



The ESR spoke to Dr. Ricardo Wenger, a neuroradiologist in Valdivia, Chile, about the value of imaging in preventing, diagnosing, and treating brain diseases.

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?

Ricardo Wenger: Brain disease diagnosis, formerly confined to clinical diagnosis by neurologists and neurosurgeons, is now undoubtedly based on imaging techniques. Thanks to computed tomography (CT) and magnetic resonance imaging (MRI), it is now possible to make at least a presumptive diagnosis of the great majority of organic brain pathologies. These include tumoural and ischaemic lesions, infectious inflammatory process, metabolic diseases, encephalic malformations and trauma lesions.

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

RW: Current imaging techniques enable us not only to diagnose various pathologies but, also in many instances, the early stages of physiopathological phenomenon. For instance, massive MRI use in the diagnosis of stroke revolutionised its management, by enabling its detection within the six-hour therapeutic window for thrombolysis. CT use in patients with trauma lesions allows the detection of juxtaposed collections for their appropriate surgical management, improving patient prognosis. Tumour follow-up with MRI combined with techniques such as spectroscopy and perfusion enables us to define treatment response and necessity of coadjuvant treatments. Current advanced techniques enable us to detect possible primary focus of seizures, and decide appropriate and personalised surgical management.

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

RW: Encephalon study is currently being performed with skull radiography in limited applications. Computed tomography (CT) is the method of choice in trauma or suspected subarachnoid haemorrhage. Magnetic resonance imaging (MRI), thanks to its excellent definition and contrast resolution, has become the gold standard in brain pathology evaluation. These last two modalities enable us to perform angiographic studies, but conventional angiography is the standard method. Interventional neuroradiology already enables us to perform endovascular procedures, with very good results.

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

RW: In Chile, we have professional medical technicians who study for five years at university, and are qualified to adequately use the various imaging techniques and optimise examination quality for diagnostic ends. The radiologist has the academic title of surgeon doctor specialised in imaging, and is qualified to perform diagnostic assessment with the different existing techniques, carry out examinations and supervise imaging centres among other activities.

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

RW: The main public regional hospitals and large referral centres in the capital have recently been equipped with CT (mainly multislice) and MRI (mainly 1.5T) scanners.

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?

RW: In Valdivia for example, the waiting time for an MRI examination is between one and six months, depending on the case. Elsewhere it can be much longer.

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

RW: Many of these diseases are still being intensively studied with new advances in early detection and treatment response. But most still present with unanswered questions.

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?

RW: Using ionising radiation in the medical setting generally brings significant benefits to the patient as it diagnoses and helps in the treatment of different pathologies. However, permanent control of radiation exposure to reduce the risk of non-desired effects to the minimum is highly desirable. In this respect, low dose protocols are increasingly used in patients undergoing repeated studies, children or pregnant women. On the other hand the personnel working with radiation are required to comply with personal radiological protection and dose measurement education on the national level. Non-ionising diagnostic methods must be prioritised whenever possible.

ESR: What kind of role can imaging play in preventing and predicting brain diseases?

RW: In my opinion imaging techniques do not have a role to play in preventing disease appearance. They obviously have a role in early detection of early stage disease, increasing adequate treatment options, and curing a large number of pathologies. Investigative studies provide us with information regarding therapy and prognosis, but in many instances this continues to change in the light of technological advances.

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?

RW: In Chile, like in other countries, we are discussing whether the radiologist should be dealing with the patient rather than with the referring clinician who receives the report. It is increasingly more common and desirable for the radiologist to have a direct relationship with the patient to discuss diagnostic alternatives and future examination characteristics, and to explain the most relevant imaging findings. This is clearly valued by the patient and places the radiologist in a more prominent clinical position.

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?

RW: Imaging use for brain pathology studies is quite common throughout our country. But there is a delay between how the costs of these examinations are administered and technological advances, which are way ahead. For instance, isolated MRI spectroscopy studies or diffusion sequences are not covered by health insurance in Chile. In public hospitals, such services are valued far less than their actual cost, which creates permanent financial deficit. Patients can contribute by staying informed and demanding their rights.

Ricardo Wenger is a neuroradiologist who works for both the public and private healthcare systems in Valdivia, South Chile.

His special interest is diagnostic neuroradiology, which he practises full time. He takes part in academic activities for both undergraduates and postgraduates at the Chilean Austral University. He is currently a member of the board of the Chilean Society of Radiology, where he represents the southern region of Chile.

