

**International Day of Radiology 2014**  
**Interview on brain imaging**  
**El Salvador / Dr. Hector Moreira**



**INTERNATIONAL  
DAY OF  
RADIOLOGY**  
AN INITIATIVE OF THE ESR, ACR AND RSNA

**The International Day of Radiology is about celebrating radiology all over the world, and the ESR spoke with Dr. Hector Moreira, a consultant physician at the Diagnostic Hospital, BMP Clinic El Salvador in San Salvador, about the resources available in his country and the role played by brain imaging.**

**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?**

**Hector Moreira:** Imaging is one of the main tools to detect brain disease. There is a wide range of pathologies that can be evaluated with magnetic resonance imaging (MRI) or computed tomography (CT) scans like brain tumours, vascular disease, degenerative disease and congenital problems. Infectious diseases are also among the most studied conditions, although there could be sometimes unspecific findings that must be completed with lab tests. Trauma is also one of the most frequent indications for imaging studies of the head and brain.

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

**HM:** Imaging is a pivotal point in brain disease management. It would be difficult for a brain disease to be treated properly without an imaging method. Nowadays an MRI or a CT scan is almost obligatory in the management of brain problems; some of them need more urgent approaches and some need more accurate evaluation. For example, in brain vascular disease, the only possibility to detect aneurysm or obstruction of a main vessel is to use imaging techniques. Detecting these conditions at a very early stage can help to prevent death or chronic disability in a matter of hours. Without any doubt, not using imaging methods leads to a poorer prognosis.

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

**HM:** The most widely used techniques are MRI and CT, and, in a particular way, conventional angiography; mainly for therapeutic approach. Each method has different protocols that depend on the condition which is going to be studied. Degenerative diseases require a totally different approach than infectious diseases. For example, in the evaluation of dementia, there are different protocols depending on the pathological condition. Vascular dementia, Alzheimer's disease or Creutzfeldt-Jakob disease each have a different approach in imaging and the protocols vary between hospitals. The main goal after all is to give all the information the clinician needs to offer the best treatment to the patient.

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

**HM:** As human societies are constantly changing, radiology is changing too. Some years ago our specialty's future was in doubt. Some argued that the radiologist was among the endangered, about-to-be-extinct species, and that because physicians like neurologists or neurosurgeons were evaluating their own images, they would probably surpass the radiologist's ability to read images. So some people wondered, "Who would need a radiologist?" A radiologist has to be more involved in patient care than ever before. The tradition of being in a room with the lights off and the door locked in order not be interrupted cannot go on. Radiologists have to be involved in patient care and have contact with the referring physician on a constant basis; they need to interact with the different services, go to the operating room, look at findings and make phone calls when necessary – and not

wait until the report arrives in the hands of the referring physician two days later. Radiologists must also be in contact with the technicians, who are very important in daily work.

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

**HM:** It is difficult to know exactly, but there are approximately 10,000 to 15,000 CT and MRI studies a year in all main hospitals. We do not have any data on head or cranial X-rays.

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

**HM:** Unfortunately, most Salvadorian hospitals have poor equipment. The big and important hospitals are located mainly in urban areas; the capital and two or three other cities. The majority of hospitals outside these areas only have x-ray systems, with no CT or MRI scanners, and none of them have a PACS system. Big efforts are being made to provide these centres with decent equipment, but the work is hard and the economic possibilities are few. Each day, government and private institutions are trying to provide more technological advances in our country.

**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?**

**HM:** In a public or governmental institution, a patient can wait on average one to three months to have an MRI appointment. In some private places, the list can go from one to three days.

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

**HM:** The possibility to clinically detect an early condition like mild cognitive disorder opens the chance of beginning early imaging evaluations, but the most important thing is to correlate the findings with the clinical aspect of the patient. We have to be aware of findings we didn't care much about years ago, like white matter hyperintensities or cortical atrophy. Findings have to be correlated with the patient's way of life, which has proved to play an important role in cognitive deterioration.

**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?**

**HM:** Each day we know more and more about radiation issues. We think that the most important thing to do is avoid unnecessary examinations. There is a wide range of totally unnecessary CT scans or x-ray studies, mainly for children. The control scans must be very carefully indicated on a daily basis. There are some cases that are unavoidable, but in others the indication is more for the clinicians to decide for themselves. Those unnecessary CT or x-ray examinations are the first step to reducing radiation exposure. When a study is performed, all measures must be taken to diminish exposure to the patient and the technical personnel; hospitals and clinics have to provide all the necessary protection methods.

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

**HM:** In our developing country the mainstream medical practice is more therapeutic than preventive. We have to change that kind of thinking so that it goes beyond medical imaging.

**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?**

**HM:** This question is a constant fight with some clinicians because a lot of them refuse to let the radiologist talk to the patient. In our country, some physicians are opposed to the idea of the radiologist communicating the diagnosis to the patient. As I explained earlier, the only way to make radiology a longstanding specialty is to have more contact with all the physicians and with the patients.

**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?**

**HM:** Imaging examinations are expensive in nature, especially MRI and CT scans. It is obvious that the work of administrative and economic advisors in a hospital is to diminish expenses and to improve approaches, but that does not happen all the time. The goal is to show the benefits of each method and how they improve healthcare and patient treatment and prognosis, but this involves the necessity of optimising scans, without unnecessary indications and unnecessary control studies. It is our hope that board, administrative, technical and clinical personnel work towards a single goal: the best quality patient care.



**Hector Moreira** is a consultant physician at the Diagnostic Hospital, BMP Clinic El Salvador in San Salvador. He specialises in magnetic resonance imaging and his main work focuses on neuroradiology, with a special interest in functional research (fMRI), diffusion tensor imaging (DTI), tractography, and support for neurosurgical planning. He also works in other areas such as musculoskeletal and body radiology. Currently, he is on the board of the Salvadorian Association of Radiology and Images, and he is a member of the Inter American College of Radiology (CIR). He was part of the scientific committee that took part in organising the 2012 CIR Congress.