

International Day of Radiology 2014
Interview on brain imaging
Uruguay / Prof. Nicolas Sgarbi



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The ESR spoke with Prof. Nicolas Sgarbi, a neuroradiologist at the Clinical Radiology Department of the Clínicas Hospital in Montevideo, Uruguay, about the techniques used to image the brain.

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

Nicolas Sgarbi: Imaging enables us to study almost all nervous system diseases, from a simple pathology without functional repercussion or vital compromise to very serious lesions such as encephalic skull trauma or tumours.

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

NS: Diagnostic imaging methods are actually a pillar in brain pathology study and they have a very significant impact on patient management. Imaging undoubtedly enables us to advance knowledge of the mechanisms leading to the development of disease, and to understand and develop new diagnostic and treatment tools.

In the meantime imaging allows studying and advancing knowledge of normal nervous system function, which remains quite misunderstood, with for instance functional magnetic resonance imaging (MRI) techniques.

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

NS: Among all the techniques we use to study brain pathology computed tomography (CT) and MRI are the most important. In some instances, we can count on ultrasound, Doppler, and advanced techniques such as positron emission tomography (PET) combined with CT.

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

NS: The radiologist is a doctor who specialises in image analysis and is responsible for their interpretation and establishing a diagnosis. The radiographer (*licenciado de radiología*) is in charge of adequately acquiring the images so that the doctor can make a correct analysis. In addition to the doctor and the radiographer, the clinical staff is essential for preparing patients and guiding them through the radiology department, and administering medication or contrast product, among other tasks.

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

NS: There are no official statistics on this data in Uruguay so it is not easy to quantify the number of annual studies. To give you an idea, at the University Hospital of Montevideo, which is a reference centre for about 750,000 patients, about 7,000 nervous system studies are performed each year, mainly CT and MRI.

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

NS: In Uruguay referral centres are usually equipped with adequate CT and MRI equipment. In some cases, access to MRI in public health centres is restrained, mainly in the heartlands, as most of the equipment is centralised in our capital Montevideo.

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?

NS: Patients must usually wait at least 30 days to undergo an MRI coordination study.

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

NS: To study these disorders we use both anatomic and structural images, with for instance MRI, and functional studies, which are very important and performed with PET. PET can also be used with image fusion.

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?

NS: Techniques such as CT and PET use ionising radiation, therefore they carry a determined risk of inducing cancer. Nevertheless, received doses of radiation are sufficiently controlled to reduce that risk to almost insignificant values, if basic principles of radiation protection are observed. Within these principles, the most important is to raise awareness among the medical community of the clear indications for examinations using radiation, and to use the techniques carrying minimum risk to avoid unnecessary dose exposure.

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

NS: In some punctual cases, imaging can help prevent or diagnose early on diseases that can become very harmful. Vascular pathology for example has a very important pre symptomatic phase, during which imaging can show the effect of arterial hypertension on both the brain and cerebral vascular tree, among other possibilities.

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?

NS: This is a very interesting question to which I don't have a precise answer. In my daily practice, I usually speak with patients and discuss with them the examination characteristics and findings, especially if we are dealing with a complex disease or cancer. I think that radiologists should discuss this topic especially between themselves, as communication between the imaging specialist and the patient is very special and necessary.

We must not forget that some of our clinical colleagues do not like for the radiologist to inform the patient about imaging findings, which certainly limits our work and ideal communication with the patient.

Nevertheless we must thrive for a better communication between doctors and patients, independently from the doctor or specialty for which we are performing our work.

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 (especially in relation to screening)? If so, how can patients help to ensure that these examinations are made available?

NS: In our country imaging examinations have a significant cost for healthcare systems, and these costs are increasing because there are no clear guidelines or protocols that specify or determine their indication and/or realisation.

This situation triggers very important costs for any healthcare system, and has led some institutions to be able to block the realisation of such examinations, which can have a negative impact on patient care.

Communicating the actual significance and limitations of every imaging technique in brain disease management to both the medical community and the patient is thus essential to improve their indications and optimise the cost/benefit relationship to avoid unnecessary costs.

Nicolás Sgarbi is a neuroradiologist in the clinical radiology department of the Clínicas Hospital in Montevideo and a former professor of anatomy at the Medical Faculty of Montevideo. His main interest is nervous system pathology evaluation with a special focus in central nervous system tumours and infections, and stroke. He was part of the development of the stroke unit at the Clínicas Hospital, a centre of reference in the country. He and his team implemented new MRI techniques in Uruguay such as diffusion, perfusion and spectroscopy. He has given lectures worldwide and authored numerous papers, mainly in the area of brain tumours, spectroscopy, stroke, venous thrombosis and nervous system anatomy. Prof. Sgarbi is a neuroradiology Fellow of the Iberian-Latin American Society of Diagnostic and Therapeutic Neuroradiology (SILAN) and a member of the board of the Uruguayan Society of Radiology and Imaging. He sits on the international reviewers committee of the Argentinian Radiology journal (SAR) and the Imágenes journal (FAARDIT).