

**INTERNATIONAL
DAY OF RADIOLOGY**

NOVEMBER 8, 2017

**EMERGENCY
RADIOLOGY**

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**International Day of Radiology 2017
Interview on Emergency Radiology
Argentina/Dr. Carlos Capiel**

Argentina's vast size, large patient load, and differences in patients' economic and social circumstances change staffing and equipment in the country's emergency departments, according to radiologist Dr. Carlos Capiel

European Society of Radiology: *Could you please describe the role of the radiologist in a typical emergency department in your country?*

Carlos Capiel: The radiologist plays a key role in the emergency departments' patient management and actively participates in pathological diagnosis. Radiologists use different diagnostic methods of varying complexity, depending on the clinical examination and the diagnostic suspicion.

Patients who visit the emergency department should get a quick and accurate diagnosis to determine treatment. Imaging studies confirm or rule out clinical suspicions, provide differential diagnosis, and determine the severity of a case. In this framework, imaging examinations are fundamental in avoiding unnecessary procedures or surgeries, expensive diagnostic evaluations, and hospitalisations.

Radiologists in Argentina are an integral part of the emergency department. They often suggest the best diagnostic method according to the clinical situation; interpret the images; and interact with the doctor on call. Radiologists are active members of the emergency team.

It is worth mentioning that Argentina is a vast country with a wide range of population densities and economic and social realities. This requires heterogeneous management, staff availability and equipment in emergency departments.

ESR: *What does a typical day in the emergency department look like for a radiologist?*

CC: The radiologist works intensively in the emergency department by caring for patients, performing and interpreting studies, and interacting with other physicians.

Before the development of cross-sectional imaging (i.e. ultrasound, CT and MRI), radiologists' contribution to the emergency department was limited to conventional radiography. Originally, emergency services did not use radiologists because emergency physicians performed image interpretation.

The relationship between emergency physicians and radiologists has evolved, and today's increased use of cross-sectional imaging requires further integration and the presence of a full-time radiologist.

Emergencies involve a lot of work for the radiologist in Argentina due to large volumes of patients, complex pathologies and greater availability of equipment. The same radiologist often works simultaneously in multiple sectors: imaging polytrauma patients with ultrasound; interpreting multislice CT (MSCT) scans in acute abdomen or skull trauma; or reviewing MRI scans in spinal trauma.

ESR: *Teamwork is crucial in an emergency department. How is this accomplished in your department and who is involved?*

CC: Teamwork and the interaction of the entire health team – physicians, radiologists, nurses, technicians and administrative staff – is fundamental for the care of patients with emergency pathologies.

Understanding the relevance and role of teamwork in this setting is essential but complex, given the large number of patients who visit the emergency department.

Our department promotes and encourages communication and dialogue with the entire healthcare staff. The radiologist participates by suggesting and interpreting studies, and consulting with the emergency physician, particularly in complex, difficult cases. Teamwork and communication with the referring physician is fundamental, as it improves diagnostic performance.

ESR: *How satisfied are you with the workflow and your role in your department? How do you think it could be improved?*

CC: Working in an emergency department involves a lot of effort and concentration. However, teamwork and resolution of cases make it rewarding.

Workflow must be constantly monitored to improve performance. That requires that radiologists continually train and update their education to minimise errors. One important way to improve workflow would be to hold weekly meetings to discuss complex cases or those that caused diagnostic difficulties. Another solution would be to incorporate emergency-radiology subspecialty topics during training or to offer these as updates in the radiology department.

ESR: *Which modalities are used for different emergencies? Could you please give an overview sorted by modalities?*

CC: In Argentina we use all diagnostic methods: x-rays, ultrasound, MSCT and MRI. X-rays are indicated in trauma cases and acute respiratory infections. Ultrasound is the modality of choice in the evaluation of acute abdomen and polytrauma in most diagnostic centres.

MSCT is indicated in polytrauma patients with thoracic and abdominal pathogenesis, which could not be resolved by other methods, as well as in patients with cerebral trauma or stroke.

MRI is used in spinal trauma and neurological emergencies, such as seizures or stroke.

ESR: *Is teleradiology an issue in emergency radiology? If yes, how so, and how often is it used?*

CC: Teleradiology is used in many centres in Argentina, mainly for consultations on MSCT and MRI studies. It is particularly useful when on-call radiologists face complex situations; are in doubt; or are residents or doctors in training. However, teleradiology does not replace an on-call radiologist, who must interact with physicians and patients to improve diagnosis.

ESR: *Are emergency radiologists active anywhere other than emergency departments? Do they have other non-emergency roles, or other emergency roles in other departments?*

CC: In Argentina, there is no subspecialisation in emergency radiology. Whether they are doctors in training or specialists in other areas, radiologists who work in the emergency department share this task with their daily activities.

ESR: *Do you have direct contact with patients and if yes, what does it entail?*

CC: Radiologists have direct contact with patients when they perform ultrasound studies, because only radiologists are qualified to perform ultrasound examinations.

While performing ultrasounds, radiologists can ask questions and obtain clinical data to make a more targeted study.

In MSCT and MRI studies, the radiologist routinely interacts with the emergency physician but rarely with the patient. The radiologist contacts patients or their family members when a finding or suspicious image requires additional clinical information that has not been provided by the referring doctor.

During radiographic studies, there is rarely any contact with the patient.

ESR: *How are radiologists in your country trained in emergency radiology? Is emergency radiology a recognised specialty in your country?*

CC: There is no subspecialty in emergency radiology in Argentina. Radiologists who work in the emergency department share this task with their routine activities.

Education and training on emergency radiology is a key issue in training and continuing education programmes in radiology departments. Scientific societies should improve and train radiologists who perform these tasks and decide whether to create this subspecialty in Argentina.

In many cases, radiologists can consult with specialists – and often do so – through teleradiology. For example, a specialist can be consulted for a brain MRI scan via teleradiology at the time of the study. If interconsultation is not available, centres review the studies the next day.

ESR: *Many cases you are faced with in the emergency setting are challenging, but can you remember what was your most impacting experience? What knowledge did you gain from that experience?*

CC: While there are many interesting clinical cases every day in the emergency department, two cases struck me the most.

The first was a patient with a history of appendectomy and endovascular treatment of infrarenal abdominal aneurysm. He presented in the emergency department with a clinical picture consistent with acute obstructive abdomen. An MSCT scan with intravenous contrast was performed and confirmed mechanical intestinal obstruction; it also showed where the obstruction occurred. A flange was etiologically diagnosed, with no tomographic signs of complication. The semiologic examination revealed signs of peritonism, so the surgeon on call took the patient to the operating room immediately.

During the surgery, which I attended, the mechanical obstruction caused by the flange diagnosed on MSCT was verified without signs of complication of the small intestine. However, a severe necrosis of the left colon was observed and removed with a left colectomy. Surgery was performed barely an hour after the MSCT and, in a retrospective examination, a correct enhancement of the colon without signs of ischaemia was observed.

Endovascular treatment is a predisposing factor to left colon ischaemia because it isolates the inferior mesenteric artery, especially if an event that predisposes to lack of flow to the Arc of Riolane, such as an inflammatory or obstructive abdominal process, is present. Even though CT is very effective in assessing patients with intestinal obstruction, there are false negatives in acute ischaemic events. The lesson I learned from this case was the importance of semiological examination: knowing the effectiveness, but, above all, the limitations of the exams we carry out. I also learned how important follow up and correlating presumptive imaging diagnosis with surgery outcome are.

The second case was a patient with severe low back pain who was referred by the traumatology department for a lumbar spine MRI. I was standing by the console, and when the study was finished, I asked the technician not to remove the patient because the study showed no alterations. The discordance between pain and normal study results was striking. I was studying the MRI carefully when an image in an axial section at the para-aortic level caught my attention. We performed a pair of sequences in the axial plane at the level of the abdomen. The images showed a ruptured aneurysm with active bleeding, which was confirmed by a contrast CT. The cardiovascular surgeon took the patient directly to the operating room, and the patient had an excellent recovery. I learned it is important to listen to the patient, ask questions, perform a physical examination, and analyse the images in the event of clinical and radiological discordance.

Dr. Carlos Capiel is head of the radiology department at the Mar del Plata Radiological Institute in the Buenos Aires region of Argentina. He also is full professor of diagnostic imaging at FASTA University in Mar del Plata and associate professor of diagnostic imaging at La Plata National University. A renowned expert in musculoskeletal imaging, Dr. Capiel is an active speaker in Argentina and Latin America, where he has been invited to give more than 80 presentations. He also has authored more than 100 publications.

He was president of the Scientific Committee of the International Congress of Radiology 2016, which was organised by the Federación Argentina de Asociaciones de Radiología, Diagnóstico por Imágenes y Terapia Radiante (FAARDIT), the Sociedad Argentina de Radiología (SAR) and the International Society of Radiology (ISR).

