International Day of Radiology 2017
Interview on Emergency Radiology
El Salvador/Dr. Marta Sosa de Cálix

In El Salvador, emergency radiologists save many patients' lives, but they must be prepared to face daunting obstacles and emotional turmoil during their work, according to Dr. Marta Sosa de Cálix

European Society of Radiology: *Could you please describe the role of the radiologist in a typical emergency department in your country?*
Marta Sosa de Cálix: Emergency units in our national hospitals are chaotic, full of patients and very limited in personnel and equipment. Radiologists and residents are overwhelmed with dozens of imaging studies, and they must deal with difficult cases, for which therapeutic actions must be taken quickly. The role of the radiologist is to guide those decisions and to provide patients with the timely treatments they need to recover.
Radiologists have momentous responsibilities, such as deciding whether to send a patient to surgery. Frequently, most of the decisions made by our clinicians and surgeons are based on imaging findings. Radiologists play an important role in managing emergency patients by providing an accurate and rapid diagnosis of their pathologies, and sometimes, by taking direct action using interventional radiology.

ESR: *What does a typical day in the emergency department look like for a radiologist?*
MSC: I work in a national hospital. It's always very busy, and each day is a new challenge. The Rosales National Hospital is the largest in El Salvador, so it takes care of most of the severe wounds from trauma and violence, as well as acute and chronic pathologies.
Patients from smaller hospitals who have the most complicated cases are transferred here. The radiologists and radiology residents in the emergency room perform a significant number of ultrasound and CT examinations, as well as interventional procedures. They maintain constant communication with surgeons, clinicians, and residents from other specialties to determine therapeutic actions. They give their opinion in imaging algorithms for specific cases or perform interventional treatments. Residents assume much of this workload and sometimes face the emergency room alone, especially during night shifts.

ESR: *Teamwork is crucial in an emergency department. How is this accomplished in your department and who is involved?*
MSC: Effective teamwork is accomplished, thanks to our hard-working residents and department radiologists, who, by the way, are few in number. Also, our effective emergency-patient management requires well-trained radiology technologists, who are available to perform high-quality examinations around the clock. The team also must include all the other medical specialties in the emergency room. In addition, hospital administrators must support our efforts by providing adequate equipment and paramedic personnel (e.g. nurses, therapists and anaesthesiologists) to properly manage patients. This is still challenging at my hospital.

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

MSC: In our department, there are many obstacles to effective workflow. The biggest obstacle is the lack of new technologies, such as a picture archiving and communication system (PACS) and a radiological information system (RIS). This delays patient care by hindering our ability to immediately view diagnostic images and compare imaging methods. Another obstacle is that we don't always have accurate information about cases; most written requests for imaging studies are completed by interns and residents, and vital information is sometimes missing.
I think better use of technologies and an improved communication with surgical or medical specialities in the emergency room would facilitate workflow and improve patient outcomes.

ESR: *Which modalities are used for different emergencies? Could you please give an overview sorted by modalities?*
MSC: X-rays are used mostly in trauma for detecting fractures and pulmonary or cardiovascular diseases in patients with chest pain and dyspnoea (i.e. pneumonia, pneumothorax or pleural effusion). X-rays are the first line imaging method for diagnosis of acute abdominal pain (e.g. renal calculi, intestinal occlusion, pneumoperitoneum and signs of peritonitis).
Ultrasound is a cost-effective modality, and it is used in all cases of acute abdominal pain to rule out surgical and nonsurgical causes (i.e. cholecystitis, renal obstructive disease and stones, abscesses and neoplastic causes of abdominal pain). Our radiology residents routinely use ultrasound in blunt abdominal trauma and in stable polytrauma patients. This modality also is useful for the diagnosis of pelvic female pathologies, such as ectopic pregnancy or ovarian cyst torsion. We use ultrasound for interventional procedures in the emergency room, such as vascular accesses and abscess drainage.
CT is used for trauma (e.g. cranial, vertebral and thoracic-abdominal; cerebral haemorrhage; acute abdominal pain; thoracic pain; and thoracic-abdominal vascular diseases).
MR is mostly used in vertebromedular trauma, when cord compression is suspected. Also, we use it for early diagnosis of stroke, neuroinfection complications or central nervous system bleeding.

ESR: *Is teleradiology an issue in emergency radiology?*
MSC: We don't use teleradiology in our hospital or in any hospital of the national system, which is unfortunate. The largest private hospitals do use teleradiology. It would be valuable for radiology residents who must manage difficult cases alone during night shifts; and for consultations with remote radiologists. It also is useful for second opinions in difficult cases. Teleradiology is a necessity in every emergency department.

ESR: *Are emergency radiologists active anywhere other than emergency departments? Do they have other non-emergency roles, or other emergency roles in other departments?*
MSC: In our hospital, we don't have dedicated emergency radiologists. In my case, I devote most of my time to MR, especially for neuroradiology; and to the residence programme. Some of my co-workers are specialised in ultrasound, others in CT. However, no one works exclusively in the emergency room, but all of us support the staff in the emergency room, when needed. In addition, we all consultant with other specialties; attend neurosurgery, orthopaedics, oncology and pathology meetings, to offer our opinion on imaging matters in specific cases; and recommend other imaging modalities, when needed.

ESR: *Do you have direct contact with patients and if yes, what does it entail?*
MSC: Yes, I have contact with patients, especially when I perform ultrasound or interventional procedures. I think radiologists must remember that we work for our patients, not just images. We must have empathy and compassion for our patients, and always inform them about the procedures we perform, and if possible, try to explain our findings in words they can understand. If necessary, we also must encourage and support our patients when they are suffering.

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

MSC: It is not recognised as a radiology specialty yet. General radiologists are trained in emergency radiology during their residency programme by rotating the emergency room.

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?*
MSC: My most impacting experience in the emergency unit occurred about one year ago, and it is a reminder of the current wave of violence in our country, which mostly affects our young people.
A 20-year-old woman who was 24-weeks pregnant presented to the emergency room with gunshot wounds to her head and thorax. She was already technically dead, and I had to perform an obstetric ultrasound to confirm the pregnancy and the condition of the foetus. It was heartbreaking to see the baby still moving without any reference to what her mother had just experienced. Neither the mother nor the baby survived. We see this kind of thing every day. Emergency radiologists must be prepared to face many obstacles; they must be ready to perform any imaging modality, sometimes with tremendous limitations in equipment and personnel. And sometimes, they must be prepared to face the worst human tragedies and injustices.

Dr. Marta Eugenia Sosa de Cálix is a general radiologist who has been managing the MR department and coordinating the radiology residency programme at the Rosales National Hospital in San Salvador, El Salvador, since 2010.
She trained as a general surgeon at the Salvadorian Social Security Institute (ISSS) in San Salvador and as general radiologist at the Spanish Hospital in Mexico City, Mexico. She also trained in MR as a fellow at the Clínica Londres in Mexico City, and in breast imaging, general ultrasound and Doppler at the American British Cowdray (ABC) Medical Centre in Mexico City.
In 2004, she returned to El Salvador to work in the MR department at the ISSS General Hospital. In addition to her public and institutional work, she worked at the Sosa-Guevara Clinic of Radiology and Ultrasound in San Salvador, the clinic founded by her father.
Dr. Sosa de Cálix is committed to education in radiology; she is a professor in the radiology residency programme and co-organiser of many radiology-education activities in El Salvador. She also is a board member in the Asociación Salvadoreña de Radiología, Ultrasonografía e Imágenes Diagnósticas and organised many radiology meetings in her country.