

Emergency radiology: state of the art

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In the past 20 years, the concept emergency care concept has deeply changed on a cultural point of view, becoming one of the emerging problems in the industrialized countries world wide. Actually, rise in access to emergency services for trauma/emergency-related problems has become increasingly common and costly in terms of both financial and societal costs. This has brought about a new concept and culture of emergency care in which time to intervention and optimising human and technological resources are crucial to avoid the loss of human lives. This Cultural Revolution in emergency care gained momentum during the past twenty years just as several fields of medicine—such as radiology, anaesthesiology, emergency medicine and surgery and trauma medicine—were undergoing important technological advances [1].

However, the “cultural revolution” in emergency care has gone well beyond the boundaries of medical science, extending to computer science, communication, architecture, urban planning, materials, etc. All this has led to the creation of structural and organisational models (layouts)—emergency departments (EDs)—sophisticated facilities where every human and technological resource have a rational functional collocation aimed.

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In this contest, radiology has gained a prominent role affirming as a distinct discipline—“Emergency Radiology”—and dedicated radiologists 24/7—“Emergency Radiologists”—as consultants with a special interest and commitment in acutely, ill patients. Actually, radiology has deeply changed the diagnosis and management approach to acutely ill and trauma patients. Consider, for instance, the advances of computed tomography (CT) and its impact on the diagnosis and management of trauma patients. Currently, patient management decisions are based largely on CT findings. CT classification and monitoring of hepatic, splenic and renal trauma have led to greatly reduced operative management of these injuries. CT and sonography have replaced diagnostic peritoneal lavage, the sole purpose of which was to demonstrate hemoperitoneum. Non-operative management has become the standard of care for all but the most severe trauma patients, while surgery being just limited to the management of catastrophic injuries. Furthermore, improvements in interventional radiology have fostered management to mini-invasive/superselective procedures thus dramatically reducing mortality, morbidity and costs of hospitalization. In some centres, emergency radiologist–angiographers perform interventional procedures in acutely ill or injured patients. High-field magnetic resonance has moved beyond its traditional application in cranio-vertebral pathology, with exciting scenarios being configured also in emergency abdominal and pelvic imaging [2].

In this contest, recognition of the need of dedicated, full coverage 24/7 emergency radiologists in the emergency room has been the true difference with the old conception of radiology and emergency care. The radiologist is now an active member of the emergency team and no more an isolated, often neglected writer of a report. It is now well accepted that radiologists play a pivotal role not only in the

diagnosis but also in the timely management approach. Full coverage 24/7 by radiologists promotes communication and interaction between the radiology department and the emergency department, which is essential for good patient care. It starts with indication for examination from the emergency physician. This allows the radiologist to understand why the examination is being done and what he or she should be looking for. It is that radiologist's responsibility to suggest the most appropriate technique and protocol of study for the case, to formulate a detailed and concise report, to deliver that report in a timely fashion, discussing the most appropriate management for the case (i.e. surgery vs. intervention or conservative). Radiologists with a special skill in emergency imaging and care are able to detect small details which may change patient's management and outcome. Consider how insidious the diagnosis of vascular injuries—blushes, A–V fistulas or pseudoaneurysms—may be. These life-threatening injuries are often very subtle and difficult to diagnose if an accurate CT examination, with an advanced protocol of study is not performed by skilled radiologist, with a special expertise in emergency radiology. This may result in a timely diagnosis and effective therapy. This can make the difference between life

and death when time matters. In conclusion, emergency care remains a cultural problem and requires conspicuous political efforts, social energies and resources. Population's needs must be understood and pursued by politicians and health care managers whose aim should be to coordinate and check the measures and human resources applied to the system. Last but not least, emergency radiology requires education, training and courses institutionally provided by Medical Universities and scientific societies for all the radiologists who want to become "Emergency Radiologists" and work in emergency centres [3].

Conflict of interest The author declares no conflict of interest.

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