Diagnostic and interventional radiology: an update

Andrea Giovagnoni¹, Massimo De Filippo², Antonio Barile³

¹ Department of Clinical, Special and Dental Sciences, University Politecnica delle Marche, Ancona, AN, Italy; ² Department of Medicine and Surgery (DiMec), Section of Radiology, University of Parma, Maggiore Hospital, Parma, Italy; ³ Department of Biotechnology and Applied Clinical Sciences, University of L’Aquila, L’Aquila, Italy

In recent years, radiology has undergone revolutionary changes in all aspects of the discipline (1-10). The progressive and rapid innovation of technology has led on the one hand to ever more significant and new applications in the diagnostic field; on the other hand, it has opened up to interventional radiology therapeutic possibilities that are radically changing the clinical approach to numerous pathologies (11-15). Furthermore, the advent of artificial intelligence is unveiling a new scenario with which the radiologist of the future will have to confront, and which will undoubtedly lead to important implications in the conception of radiology (16-18). In this context of innovation, the clinical and - above all - global approach of radiology remains fundamental (19-21); it is for this reason that with this Special Issue entitled “Diagnostic and interventional radiology: an update” we wanted to deal with some focuses that summarized the foundations of diagnostic and interventional radiology topics in light of the relative “state of the art”.

In the first part of the volume, dedicated to abdominal imaging (22-24), the first two articles, “Hepatic tumors: pitfalls in diagnostic imaging” and “The role of imaging in surgical planning for liver resection” represent a guide to the radiologist who have to integrate the different and multimodal diagnostic techniques, to confront and being a point of reference for the clinicians and the surgeons in the patient’s therapeutic management (25-27).

The third article by Reginelli et al., “MRI of perianal fistulas in Chron’s disease”, also deals with a very frequent pathology, for which a precise and therapy-oriented imaging diagnosis is fundamental. In particular, the authors provide valuable notions of anatomy and study technique, essential for the formulation of an exhaustive diagnosis (28).

Another contribution by Reginelli et al., “Extranodal lymphomas: a pictorial review for CT and MRI classification”, focuses on the study of the imaging classification of a pathology in which staging and treatment are primarily clinical, but supported by careful imaging study.

In the second section, we focused on thoracic and cardiovascular radiology topics (29-31). The article “Anterior chest wall non-traumatic diseases: a road map for the radiologist” is an accurate focus on the pathology of the chest wall, a topic for which the radiologist can often find difficulties about the information to provide to the clinician, and for which knowledge of anatomy and possible pathological pictures is of fundamental importance.

Following the recent tragic pandemic outbreak of Coronavirus pneumonia, Floridi et al. discuss, with a “practical guide”, the fundamental role of diagnostic imaging in the approach and management of patients with COVID-19.

The last article of the thoracic section is the contribution of Pradella et al., “Masses in right side of the heart: spectrum of imaging findings”, dedicated to cardiac radiology, in which the authors provide an overview of the radiological characteristics - either with coronary CT and with cardiac MRI – of cardiac tumors and masses.

The next section is dedicated to the great chapter of interventional radiology, of which we have collected some insights. The work by Ierardi et al., “Basic em-
bolization techniques: tips and tricks” is a handy guide to the interventional radiologist, more or less expert, providing practical indications on the techniques and materials for one of the leading and most crucial interventional radiology endovascular procedures (32).

Another technique for which interventional radiology has become a fundamental prerogative is biopsy. Pagnini et al. discuss about it in their contribution “Imaging guided percutaneous renal biopsy”, underlining the importance of the knowledge of imaging in such a demanding approach as that of renal biopsy.

Turning to extravascular interventional neuroradiology, Negro et al., in their article “Predictive factors of volumetric reduction in lumbar disc herniation treated by O2-O3 chemiodiscolysis”, present an original study dealing with a popular, effective and minimally invasive technique for the treatment of low back pain (33, 34).

The recent innovations applied to diagnostic and interventional radiology have led to significant changes also in the field of musculoskeletal radiology (35-39). In the article “Advanced diagnostic imaging and intervention in tendon diseases”, Bruno et al. describe the application of advanced MRI and US techniques in the study of degenerative tendon pathology, together with the description of the main imaging-guided interventional techniques (40).

More focused on diagnostics, the contribution of Acanfora et al. on the spectrum of synovial pathology describes the most frequent inflammatory, degenerative, and pseudotumoral pathology (41, 42).

Dual-energy technology in CT imaging has been introduced recently (43); one of the most interesting and useful applications is the study of joint gouty crystals, described by Carotti et al. in the work “Clinical utility of Dual energy Computed Tomography in gout: current concepts and applications”.

The last two articles of the volume are dedicated to neuroradiology (44-48). The contribution of Palumbo et al. is a comprehensive review of the clinical, diagnostic, and therapeutic features of spondylodiscitis. In the article “Diagnosis and management of intralabyrinthine schwannoma: case series and review of the literature”, Di Lullo et al. integrate the clinical and imaging aspects of this pathology, with the consequent implications in therapeutic management.

Despite the difficulty in the exhaustive treatment of such vast and complex topics, we believe that the proposed works can be essential and useful targeted insights for radiologists of different subspecialties.

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Correspondence:
Antonio Barile
Department of Biotechnology and Applied Clinical Sciences,
University of L’Aquila, L’Aquila, Italy
Via Vetoio 1, 67100 – L’Aquila, Italy
E-mail: antonio.barile@univaq.it