



Editorial on impact of cardiac CT in clinical practice

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Non-invasive coronary imaging has been the focus of research and of several imaging modalities for several years if not decades. Electron-beam computed tomography (EBCT), magnetic resonance (MR), and finally computed tomography (CT) which finally made it to clinical arena.

Cardiac CT was actually “born” in 1999 after a few experiments with prior CT generations equipped with 2 detector rows. At that time a 4-detector-row (i.e., 4-slice) CT equipment was available for the first attempts. Temporal resolution was low (250 ms for one half rotation of the gantry; i.e., image) and patients had to be very stable, with very low and stable heart rate and capable of holding their breath for 40–45 seconds. However, the first images were already astonishing and it was clear that by improving the many (but actually not too many) parameters involved, cardiovascular computed tomography (CCT) had the potential to become the non-invasive imaging modality of choice for cardiac and coronary imaging. And this is exactly what happened in last 20 years (1-5). CCT has developed and has become the pivotal anatomical imaging technique for cardiac and vascular diseases in general. It is the first line in suspected coronary artery disease (CAD) detection and anatomical quantification but more recently it is also developing in the field of functional application relying on advanced software and/or standard dynamic perfusion techniques.

In clinical practice CCT is the go-to method when you have to decide if a patient is carrying or not significant obstructive lesions and if these lesions are more suitable for revascularization or for optimal medical therapy (1-5). After

the results of the PROMISE trial, the SCOT-HEART trial, and the ISCHEMIA trial, all these concepts have translated in a long-awaited change of paradigm. First anatomy and then function at least when it comes to ischemia and obstructive CAD. This has been also implemented in recent guidelines.

The really interesting development that CCT has the duty and the honor to carry is however different. It is, in fact, the method that is leading the research and the future implementation of concepts of personalized medicine, precision medicine and radiomics on a population level.

This special series on cardiac CT in clinical practice would like to provide our readers an overview of all aspects of contemporary cardiac CT. The basics, fundamentals and evidence of cardiac CT clinical use are covered in detail in this series.

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