MAGNETIC RESONANCE IMAGING IN THE EVALUATION OF CORONARY ARTERIES, STATE OF THE ART AND FUTURE ROLE: CORONARY ANGIOGRAPHY AND VESSEL WALL EVALUATION BY MAGNETIC RESONANCE IMAGING

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Coronary artery disease is the major cause of death in western countries, and coronary artery tree evaluation still relies on X-ray contrast coronary angiography. Magnetic resonance coronary angiography approaches had to overcome some cardiac and respiratory motion artifacts with electrocardiographic gating, multiple breath-hold or navigator sequences in order to obtain clinical useful images. First attempts showed limited results, but newer and faster sequences during breath-hold (first generation), navigator (second generation) and recently (spiral, dark blood and parallel imaging) introduced a wide range of techniques for consistent diagnostic management. Finally, extracellular paramagnetic contrast and, experimentally, intravascular contrast agents improved image quality. Clinical applications nowadays are the evaluation of congenital anomalies, bypass grafts, and coronary obstructions. Literature reports showed long coronary segments and a variety of degrees of sensibility and specificities on the coronary evaluation. Until now, the basis of quantification of coronary atherosclerotic disease is the lumen evaluation during angiography, what may not be considered the most reliable parameter. Recently, vessel wall analysis showed significant differences between normal volunteers and patients with known coronary disease, opening a broad range of new information. In conclusion, the rapid evolution of magnetic resonance imaging allowed promising results on the evaluation of the coronary tree and vessel wall morphology. These results may have a profound impact on early detection, follow-up and treatment results of the coronary artery disease.

Key words: magnetic resonance imaging, coronary artery disease, coronary angiography, atherosclerosis.

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