Abstract

Introduction: Magnetic resonance (MR) represents still the gold standard in myocardial imaging. There are some studies suggesting that the computed tomography (CT) might be a valid alternative for some patients (especially the ones who are unable to undergo MR).

Aims: We had two aims. Aim number 1: To evaluate the ability of CT in the evaluation of delayed contrast enhancement (DCE) in patients with dilated cardiomyopathy. Aim number 2: To assess the possibilities of CT originally performed for a different indication in myocardial tissue characterization.

Methods: Part 1: We prospectively enrolled 17 patients with dilated cardiomyopathy. All the patients underwent both cardiac CT and cardiac MR. We compared the findings of DCE on CT with the findings of DCE on MR. Part 2: We retrospectively evaluated 96 patients who underwent both CT for any indication and cardiac MR. We compared the findings of a hypodense area in the myocardium with the findings of DCE on MR.

Results: Part 1: CT detected DCE in 3 patients and MR detected DCE in 6 patients. The agreement between both modalities was in 82% cases (kappa 0.56). The sensitivity and specificity of CT were 50% and 100%, respectively and the positive predictive value was 100%. In patients with positive findings on CT, the localization of DCE was almost identical compared to MR. Part 2: CT was positive in 28 patients and negative in 68 patients. Of the 28 patients with positive CT findings, 18 patients had positive MR findings in the same segment, 3 had positive MR findings in a different segment. Of the 18 patients with the same segment involved on both CT and MR, 14 patients (78%) had the same myocardial layer involved. In 7 patients with positive CT findings, the MR was negative.

Conclusion: Our results suggest that CT evaluation of the myocardium is feasible and has a relatively high diagnostic accuracy. However, it is not able to fully replace the cardiac MR, particularly due to limited sensitivity. In patients who are unable to undergo MR, CT performed with a dedicated protocol can be a useful alternative to MR. Moreover, our results suggest that even CT performed for a different indication can be helpful in the evaluation of the myocardial pathology.