Herz 2017 · 42:792
DOI 10.1007/s00059-016-4526-1
Published online: 18 January 2017

P. Kuchynka[1] · V. Cerny[2] · T. Palecek[1]

[1] 2nd Department of Medicine – Department of Cardiovascular Medicine, First Faculty of Medicine, General University Hospital in Prague, Charles University in Prague, Prague, Czech Republic

[2] Department of Radiology, First Faculty of Medicine, General University Hospital in Prague, Charles University in Prague, Prague, Czech Republic

Is cardiac CT capable to distinguish between myocardial fibrosis and inflammation?

Reply

This is a reply to the letter by Noutsias M, Mavrogeni S, Spillman F, Tschöpe C (2016) Cardiac computed tomography. A new player in the imaging portfolio for myocardial fibrosis. Herz. doi:10.1007/s00059-016-4518-1

Original article: Cerny V, Kuchynka P, Marek J et al. (2016) Utility of cardiac CT for evaluating delayed contrast enhancement in dilated cardiomyopathy. Herz. doi:10.1007/s00059-016-4515-4

First of all, we would like to thank the editor for the positive response to our manuscript entitled "Utility of cardiac CT for evaluating delayed contrast enhancement in dilated cardiomyopathy" [1].

We fully agree with Noutsias et al. that delayed contrast enhancement (DCE) in patients with non-ischemic dilated cardiomyopathy (DCM) might reflect not only genuine scar but also other pathologies [2]. DCE detected by cardiac magnetic resonance (CMR) occurs in areas of expanded extracellular space due to the higher regional gadolinium concentration; thus, various myocardial pathologies including not only fibrosis but also necrosis or infiltration leading to interstitial expansion can be depicted by DCE [3]. An analogous principle of iodine contrast agent distribution, with accumulation in the expanded extracellular space and prolonged clearance from this region, is also applied in the explanation of DCE in patients examined with cardiac CT (CCT) [4].

There is increasing evidence supporting the utility of CCT in the detection of DCE corresponding to myocardial fibrosis in patients with hypertrophic cardiomyopathy and in subjects after myocardial infarction. Moreover, there is some evidence of a promising correlation between CCT and CMR in the detection of DCE in subjects with acute myocarditis [4, 5]. However, there are missing data regarding the utility of CCT in the evaluation of DCE in patients with chronic myocarditis and inflammatory cardiomyopathy (DCMi).

We believe that no clear conclusions regarding the differentiation between fibrosis and myocardial inflammation in patients with DCM can be currently drawn based solely on the presence of DCE on CCT or CMR. We absolutely agree with Noutsias et al. that endomyocardial biopsy (EMB) using histological, namely, immunohistochemical, criteria is still considered the gold standard in the diagnosis of myocarditis and DCMi. Therefore, we believe that further investigation of the correlation between DCE detected by CCT and findings in EMB in patients with unexplained DCM is strongly needed to address this interesting and clinically very important issue.

Corresponding address

P. Kuchynka, MD, PhD
2nd Department of Medicine – Department of Cardiovascular Medicine, First Faculty of Medicine, General University Hospital in Prague, Charles University in Prague
Prague, Czech Republic
kuchynkap@seznam.cz

Conflict of interest. P. Kuchynka, V. Cerny, and T. Palecek declare that they have no competing interests.

References

1. Cerny V, Kuchynka P, Marek J et al (2016) Utility of cardiac CT for evaluating delayed contrast enhancement in dilated cardiomyopathy. Herz. doi:10.1007/s00059-016-4515-4
2. Noutsias M, Mavrogeni S, Spillman F, Tschöpe C (2016) Cardiac computed tomography. A new player in the imaging portfolio for myocardial fibrosis. Herz. doi:10.1007/s00059-016-4518-1
3. Maceira AM, Joshi J, Prasad SK et al (2005) Cardiovascular magnetic resonance in cardiac amyloidosis. Circulation 111:186–193
4. Dambrin G, Laissy JP, Serfaty JM et al (2007) Diagnostic value of ECG-gated multidetector computed tomography in the early phase of suspected acute myocarditis. A preliminary comparative study with cardiac MRI. Eur Radiol 17:331–338
5. Tröbs M, Brand M, Achenbach S, Marwan M (2014) Ultra-low dose comprehensive cardiac CT imaging in a patient with acute myocarditis. J Cardiovasc Comput Tomogr 8:475–476