Echocardiographic detection of myocardial crypts in hypertrophic cardiomyopathy: a first report in phenotype-positive patient

Miloslav Spacek1*, Jiri Fiedler1, Vojtech Suchanek2, and Josef Veselka1

1Cardiovascular Center, Department of Cardiology, University Hospital Motol, 2nd Medical School, Charles University, V Úvalu 84, 150 00 Prague 5, Czech Republic and 2Department of Imaging Techniques, University Hospital Motol, Prague, Czech Republic

* Corresponding author. Tel: +420 224434901; Fax: +420 224434920. Email: mildaspacek@gmail.com

A 39-year-old patient with hypertrophic cardiomyopathy (HCM) and past medical history of surgical myectomy (requiring permanent pacemaker insertion for post-procedural atrio-ventricular block) was referred to our institution following episode of unexplained syncope. Transthoracic echocardiography (TTE) showed severe biventricular hypertrophy with septal thickness of 28 mm (Panel A, area of previous myectomy marked by asterisk), only mild systolic anterior motion of the anterior mitral valve leaflet, and minimal gradient in the left ventricular outflow tract (LVOT). Interestingly, with excellent TTE window, two prominent myocardial crypts were detected in the anterolateral segment of the left ventricle at the level of papillary muscle tips (Panel B, arrows, see Supplementary data online, Video S1) and their presence was further confirmed by contrast-TTE (Panel C, arrows). Preoperative cardiac magnetic resonance (CMR) images were obtained for re-evaluation. While crypts were missed by standard two- and four-chamber planes, one crypt was partially captured in the coronal LVOT view (Panel D, arrow). To our best knowledge, this is a first report of TTE-detected crypts in a patient with marked hypertrophy.

Myocardial crypts, currently investigated as a potential morphological marker of HCM, are commonly present in gene carriers and can be identified in minority of patients who developed hypertrophy as well. CMR is the preferred method for the detection of crypts and many authors discourage the use of 2D echocardiography due to its lower spatial resolution. Nevertheless, the sensitivity of CMR in crypt detection is largely dependent on protocol used and can be significantly increased when modified projections are added to standard long-axis planes. Based on our experience, we suggest that, with optimal window, myocardial crypts may be detected even with TTE.

Supplementary data are available at European Heart Journal – Cardiovascular Imaging online.