Echocardiographic assessment and monitoring of the clinical course in a patient with Tako-Tsubo cardiomyopathy by a novel 3D-speckle-tracking-strain analysis

Hannibal Baccouche*, Martin Maunz, Torsten Beck, Peter Fogarassy, and Martin Beyer

Medizinische Klinik II, Klinikum Kirchheim unter Teck, Kreiskliniken Esslingen, Eugenstrasse 3, 73230 Kirchheim unter Teck, Germany

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Using real-time 3D-speckle-tracking in the clinical course of Tako-Tsubo turned out as a quick and feasible tool for recognition and follow-up of wall motion abnormalities.

Case report

A 79-year-old woman was admitted with an acute coronary syndrome. Real-time 3D-speckle-tracking echocardiography was performed (TOSHIBA-Artida™).

2D-echo-images displayed basal hyperkinesia and apical antero-septal dyskinesia. Radial strain was colour encoded (Figure 1, http://www.kk-es.de/TakoTsubo/Figure1/index.html, Movie clips 1–5).

Numeric radial strain curves demonstrated basal hypercontractility as considerable positive values (e.g. 75%, red) and apical dyskinesia as negative values (e.g. −7%, dark green), Movie clip 6. Dyskinesia was demarcated in the bull’s-eye plot at a glance (Figure 2, http://www.kk-es.de/TakoTsubo/Figure2/index.html, Movie clip 7). Radial strain, transcribed to a wired 3D-model, impressively demonstrated contraction abnormalities (Figure 3, http://www.kk-es.de/TakoTsubo/Figure3/index.html, Movie clip 8).

3D-speckle-tracking echo was suspicious for Tako-Tsubo cardiomyopathy, which was confirmed by the patients’ history, ECG, serum-markers, and catheter (Figure 4, http://www.kk-es.de/TakoTsubo/Figure4/index.html, Movie clips 9–10).

At 6 weeks follow-up, contraction had recovered (Figures 5–7, http://www.kk-es.de/TakoTsubo/Figure5/index.html, http://www.kk-es.de/TakoTsubo/Figure6/index.html, http://www.kk-es.de/TakoTsubo/Figure7/index.html, Movie clips 11–18).

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Figure 1 2D-strain-encoded echo images of short and long axis at initial presentation.
Figure 2  Numeric segmental radial strain at initial presentation.

Figure 3  Left ventricular 3D wired model at initial presentation.

Figure 4  Cardiac catheterization comprising levocardioiography and coronary angiography.
Figure 5  2D-strain-encoded echo images of short and long axis at follow-up.

Figure 6  Numeric segmental radial strain at follow-up.

Figure 7  Left ventricular 3D wired model at follow-up.