Synchronicity of echocardiography and cardiac nuclear medicine in mid-ventricular ballooning syndrome: paired ‘ring signs’ on polar maps

Tomoo Nagai1*, Takao Konishi1, Junko Arakawa1, Hideki Hisadome2, and Hirotsugu Tabata1

1Department of Cardiology, Japan Self-Defense Forces Central Hospital, Ikejiri 1-2-24, Setagaya-ku, Tokyo 154-8532, Japan and 2Department of Cardiology, KKR Mishuku Hospital, Tokyo, Japan

* Corresponding author. Tel: +81 334110151; Fax: +81 334180030, Email: tknagai@zd5.so-net.ne.jp

A 74-year-old woman was hospitalized for chest pain. A coronary angiogram showed no organic stenosis in the coronary arteries. However, a left ventriculogram showed akinesis in the middle portion of the left ventricle (Supplementary data online, Movie S1). A transthoracic echocardiography (TTE) was performed, and two-dimensional longitudinal strain images obtained on the apical four-chamber view, two-chamber view, and long-axis view, further confirmed the above-mentioned finding (Supplementary data online, Movie S2, S3, and S4; Panel A: left upper and lower; and Panel B: upper). A three-dimensional TTE indicated the presence of ring-shaped wall motion abnormalities on a polar map (Panel B: lower). We concluded that her condition was mid-ventricular ballooning syndrome. Thereafter, 201Tl and I-123-beta-methyl-iodophenylpentadecanoic acid (BMIPP) dual-single photon emission computed tomography was performed to exclude the possible previous myocardial injury. Although the Tl images showed no defects (Panel A: middle upper and lower and Panel C: left upper and lower; early: 1 h after the injection; delayed: 4 h after the injection), the BMIPP images showed metabolic abnormalities (Panel A: right upper and lower and Panel C: middle upper and lower). Moreover, the mismatch images obtained by subtracting the Tl image from the corresponding BMIPP image clearly showed ring-shaped defects on polar maps (Panel C: right upper and lower). This report emphasizes the clinical utility of comparing left ventricular wall motion and metabolism using polar maps in patients with mid-ventricular ballooning syndrome. A pair of ‘ring signs’ detected by echocardiography and cardiac nuclear medicine can serve as a new diagnostic landmark.

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

Image focus