

Images in Cardiovascular Medicine



Acute Localized Myocarditis: Role of Speckle Tracking Echocardiography

Min Ji Kim , MD, Geu-Ru Hong , MD, PhD, Jong-Won Ha , MD, PhD, and
 Chi Young Shim , MD, PhD

Division of Cardiology, Department of Internal Medicine, Severance Cardiovascular Hospital, Yonsei
 University College of Medicine, Seoul, Korea



Received: Nov 19, 2019

Revised: Jan 18, 2020

Accepted: Feb 11, 2020

Correspondence to

Chi Young Shim, MD, PhD

Division of Cardiology, Department of Internal
 Medicine, Severance Cardiovascular Hospital,
 Yonsei University College of Medicine, 50-1,
 Yonsei-ro, Seodaemun-gu, Seoul 03722, Korea.
 E-mail: cysprs@yuhs.ac

Copyright © 2020. The Korean Society of
 Cardiology

This is an Open Access article distributed
 under the terms of the Creative Commons
 Attribution Non-Commercial License ([https://
 creativecommons.org/licenses/by-nc/4.0](https://creativecommons.org/licenses/by-nc/4.0))
 which permits unrestricted noncommercial
 use, distribution, and reproduction in any
 medium, provided the original work is properly
 cited.

ORCID iDs

Min Ji Kim

<https://orcid.org/0000-0002-5332-9673>

Geu-Ru Hong

<https://orcid.org/0000-0003-4981-3304>

Jong-Won Ha

<https://orcid.org/0000-0002-8260-2958>

Chi Young Shim

<https://orcid.org/0000-0002-6136-0136>

Conflict of Interest

The authors have no financial conflicts of
 interest.

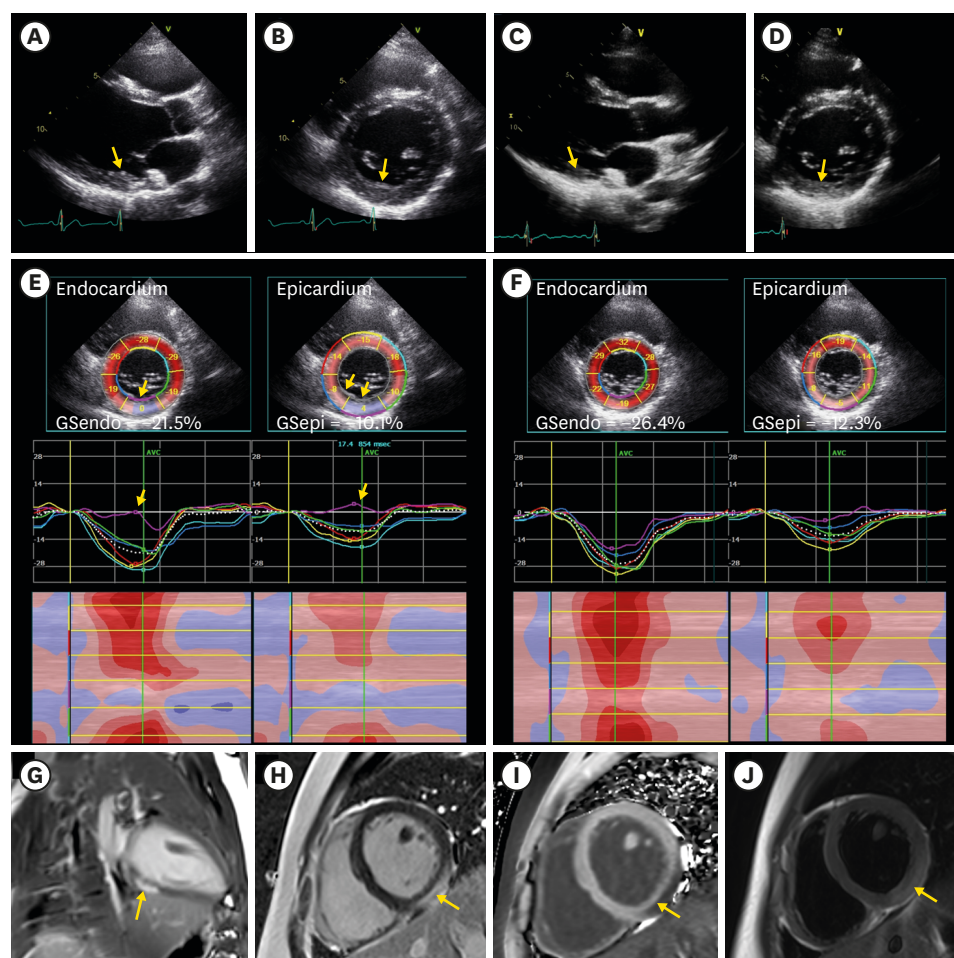


Figure 1. Echocardiographic and magnetic resonance images. (A, B) Mild thickening of posterolateral segment at the basal left ventricle on two-dimensional echocardiogram (arrow). (C, D) Improved wall thickening of the posterolateral segment at the basal left ventricle on two-dimensional echocardiogram (arrow). (E) Impaired circumferential strain at posterolateral wall on speckle tracking echocardiogram (arrow). (F) Abnormal circumferential strain values were improved at 2 weeks of follow-up speckle tracking echocardiogram. (G, H) Subepicardial delayed enhancement in basal inferior and posterolateral walls on cardiac magnetic resonance (arrow). (I) Increased native T1 value on cardiac magnetic resonance (arrow). (J) Increased T2 value on cardiac magnetic resonance (arrow).

Author Contributions

Conceptualization: Shim CY; Data curation: Kim MJ; Formal analysis: Shim CY; Investigation: Shim CY; Resources: Shim CY; Supervision: Hong GR, Ha JW, Shim CY; Writing - original draft: Kim MJ; Writing - review & editing: Hong GR, Shim CY.

A 14-year-old boy visited emergency department due to severe continuous chest pain for 2 days. His electrocardiogram revealed sinus rhythm without significant ST segment or T wave abnormalities. Vital signs were stable without fever. Cardiac biomarkers were markedly elevated (troponin T 987 pg/mL and creatine kinase MB 31.9 pg/mL), but inflammatory markers were within normal range (C-reactive protein 2.5 mg/L). Cardiac computed tomography showed normal coronary artery. Echocardiography showed no regional wall motion abnormality with normal left ventricular systolic function. There was no pathologic pericardial effusion. On close examination, posterolateral segment at the basal left ventricle appeared to be a little thick, but it was unclear whether it was the cause of chest pain (**Figure 1A and B, Supplementary Videos 1 and 2**). When multi-layer speckle tracking echocardiography (STE) was applied, epicardial circumferential strain from posterolateral to inferior wall and endocardial circumferential strain at posterolateral wall were significantly impaired. Impaired circumferential strains predominantly at epicardial layer were compatible with myocarditis (**Figure 1E**). After taking anti-inflammatory medications, the patient's symptom was relieved and cardiac biomarkers were normalized. The thickness of the basal posterolateral segment decreased (**Figure 1C and D, Supplementary Videos 3 and 4**) and abnormal circumferential strain values were improved at 2 weeks of follow-up STE (**Figure 1F**). Cardiac magnetic resonance at the presentation of chest pain showed subepicardial delayed enhancement in basal inferior and posterolateral walls (**Figure 1G and H, Supplementary Video 5**) with increased native T1 (**Figure 1I**) and T2 values (**Figure 1J**) in corresponding areas. This case showed a crucial role of STE for diagnosis and follow-up of acute localized myocarditis, since both electrocardiogram and conventional echocardiography were inconclusive.

SUPPLEMENTARY MATERIALS

Supplementary Video 1

Mild thickening of posterolateral segment at the basal left ventricle on the parasternal long-axis view.

[Click here to view](#)

Supplementary Video 2

Mild thickening of posterolateral segment at the basal left ventricle on the parasternal short-axis view.

[Click here to view](#)

Supplementary Video 3

Improved wall thickening of the posterolateral segment at the basal left ventricle on the parasternal long-axis view.

[Click here to view](#)

Supplementary Video 4

Improved wall thickening of the posterolateral segment at the basal left ventricle on the parasternal short-axis view.

[Click here to view](#)

Supplementary Video 5

Subepicardial enhancement in basal inferior and posterolateral walls on cardiac magnetic resonance.

[Click here to view](#)