Where is the culprit?

A 59-year-old male patient with a history of stent implantation in the left anterior descending coronary artery (LAD) 12 years ago was admitted to the emergency department. He had a squeezing chest pain that had appeared suddenly 8 h ago but seemed to disappear spontaneously at the time of presentation. Clinical examination was unremarkable. His heart rate was 69 beats per minute and blood pressure was 130/65 mm Hg. The electrocardiogram showed a normal sinus rhythm; however, there was a poor R-wave progression with minimal ST-segment elevation in leads V1 to V3 (Fig. 1). Transthoracic echocardiography showed a near normal left ventricular ejection fraction with mild hypokinesia of the mid-inferolateral wall. The other segments had normal contraction. In the meanwhile, troponin I level was found to be elevated (1.63 ng/mL; the upper limit of the normal level = 0.028 ng/mL). Complete blood count and serum creatinine concentration were in the normal range. Invasive coronary angiography was then performed and revealed mild in-stent restenosis of the LAD stent with no flow-limiting obstruction elsewhere; however, the phenomenon of coronary slow flow was observed in the right coronary artery (RCA) (Fig. 2, Video 1-3).

Which of the following could be the cause of troponin release?

A. Acute occlusion of the anomalous branch of the circumflex coronary artery (CX)
B. The phenomenon of coronary slow flow in the RCA
C. Isolated acute occlusion of the right ventricular branch of the RCA
D. Transient thrombus formation superimposed at the site of in-stent restenosis of the LAD
E. Takotsubo cardiomyopathy

Video 1. Coronary angiogram of the left coronary artery system in the left anterior oblique caudal projection.
Video 2. Coronary angiogram of the left coronary artery system in the right anterior oblique caudal projection.
Video 3. Coronary angiogram of the right coronary artery in the left anterior oblique projection.

Figure 1. Electrocardiogram of the patient at admission

Figure 2. a-c. Coronary angiogram of the left coronary artery system in the left and right anterior oblique caudal projection (a, b) and of the right coronary artery in the left anterior oblique projection (c)

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