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Clinical Presentation

A 65-year-old female with history of hypertension, diabetes, hyperlipidemia and recently diagnosed COVID19 infection presented with intermittent, non-radiating, substernal chest pain for 3 days. Her pain was pressure-like in quality, seven out of ten in intensity, and present during both rest and exertion. She was also noted to have multiple likely embolic strokes and supraventricular tachycardia responsive to adenosine. Initial vitals were unremarkable. Electrocardiogram (EKG) on arrival showed ST-segment elevation in leads II, III, and aVF. Her initial troponin level was 9.32 ng/mL and peaked at 19.29 ng/mL. Brain natriuretic peptide was elevated to 725 pg/mL. Patient underwent left heart catheterization, which showed clean coronary arteries. Transthoracic echocardiogram (TTE) showed a reduced LVEF of 35%, apical ballooning, and apical akinesis, suggestive of mid-ventricular Takotsubo cardiomyopathy (TCM) (Figure 1).

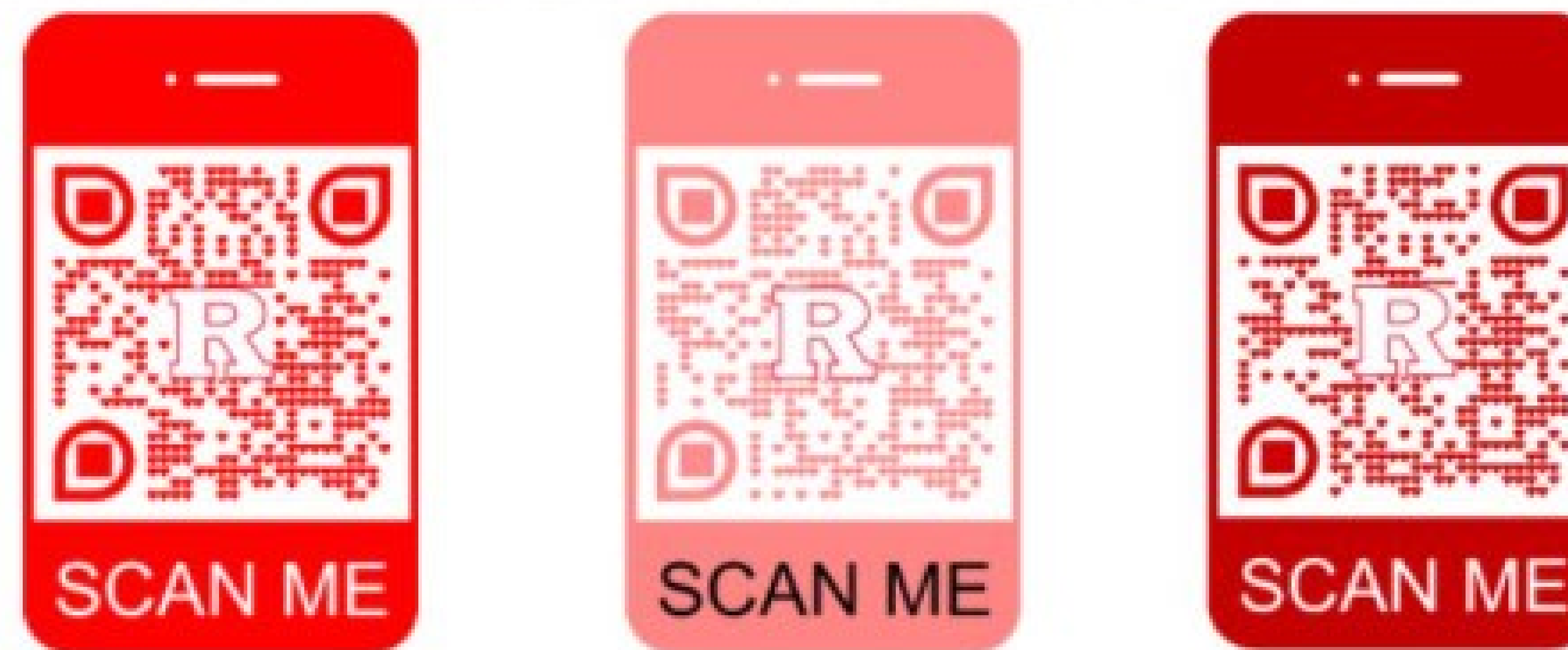
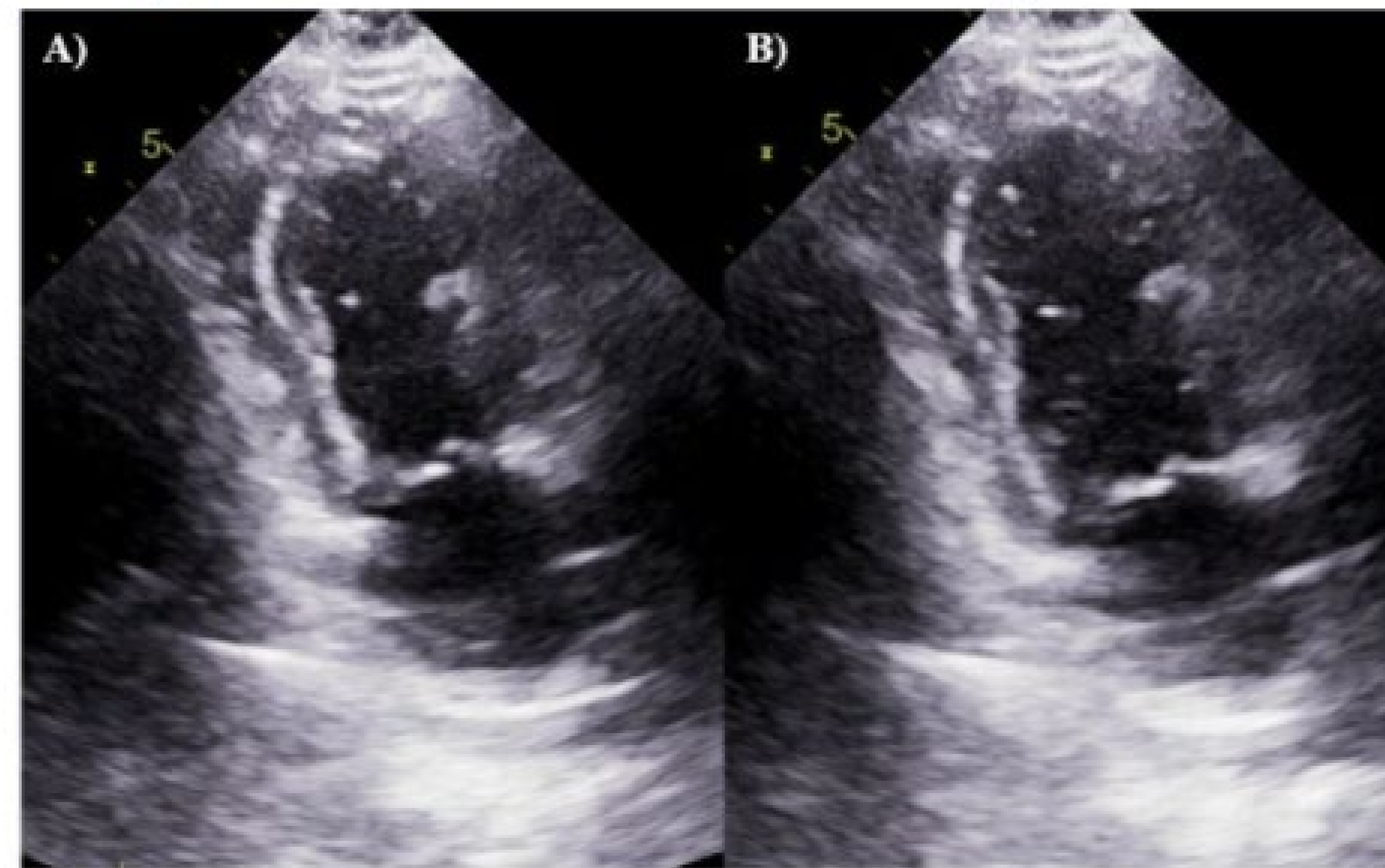


Figure 1: Transthoracic echocardiogram (TTE) showing moderately reduced left ventricular systolic function with ejection fraction of 35%. There were mid-anterior, mid-anteroseptal, mid-inferoseptal, mid-inferior, mid-inferolateral, mid-anterolateral and apical septal wall segment akinesis with apical ballooning, suggestive of mid-ventricular Takotsubo cardiomyopathy. Comparison of left ventricle in A) end-systole and B) end-diastole. QR codes in order from left to right represent TTE videos in the apical two-chamber view, apical 4-chamber view, and lastly, parasternal long-axis view.

Imaging Findings

Please see Figure 1.

Role of Imaging in Patient Care

TTE showed findings typical of mid-ventricular TCM. Given these findings, the patient was optimized on metoprolol tartrate, sacubitril-valsartan, and spironolactone. Therapeutic heparin and remdesivir were initiated given concern for embolic stroke and subsegmental pulmonary embolism in the setting of COVID19 infection. Despite the above measures, the patient ultimately expired.

Discussion

TCM is a reversible and temporary ventricular dysfunction that occurs in the critically ill. TCM often mimics acute coronary syndrome with chest pain, elevated cardiac biomarkers, and ST-segment elevation on EKG. However, the role of TTE in identifying TCM with features of apical ballooning, dilation, and left ventricular akinesia remains critical in narrowing differential diagnoses. While optimal management for TCM in COVID19 infection is not established, both conditions are respectively associated with high mortality. Further research is required to better treat these devastating co-morbidities.