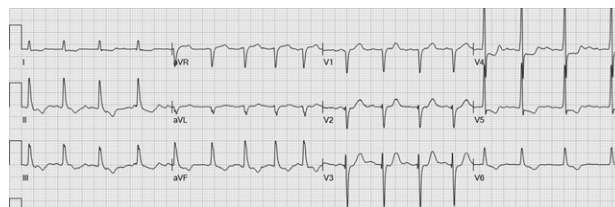


# Hepatocellular Carcinoma Involving the Left Ventricle

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**A** 58-year-old man with hepatitis C cirrhosis presented with confusion and could not provide a relevant medical history. Physical examination revealed an irregular heart rate. An electrocardiogram showed rate-controlled atrial fibrillation with ST-segment depressions, suggesting inferolateral ischemia (Fig. 1). The patient's cardiac troponin I level was elevated. A chest computed tomogram revealed a 3-mm solid pulmonary nodule in the left upper lobe. A transthoracic echocardiogram showed a 3-cm, well-circumscribed, homogeneous mass infiltrating the basal inferior and inferolateral walls and extending into the left ventricular (LV) cavity (Fig. 2). On the basis of available imaging and the patient's clinical course, the tumor was identified as hepatocellular carcinoma.



**Fig. 1** Electrocardiogram on presentation shows atrial fibrillation and ST-segment changes, suggesting inferolateral ischemia.

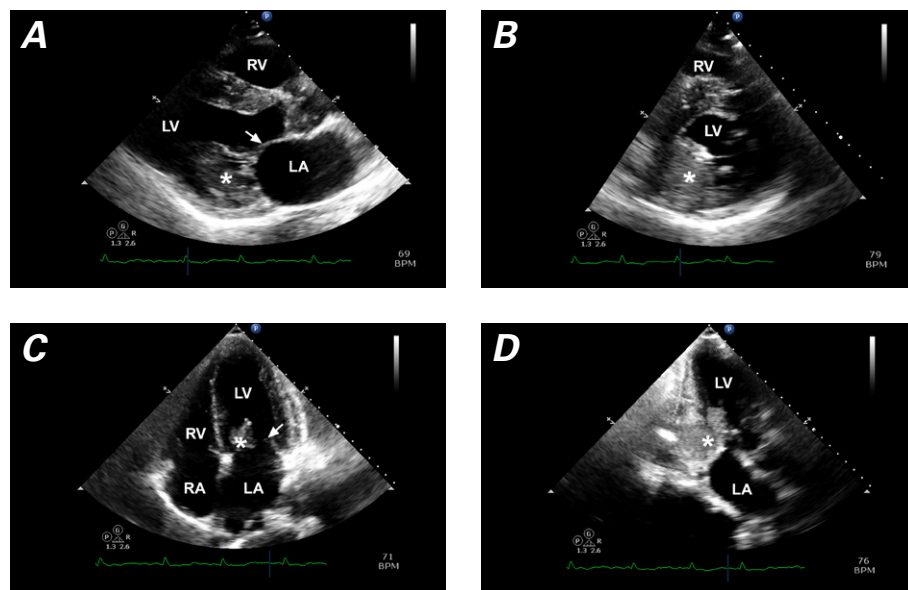
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**Fig. 2** Transthoracic echocardiogram in **A**) parasternal long-axis, **B**) parasternal short-axis, **C**) apical 4-chamber, and **D**) apical 2-chamber views shows the hepatocellular carcinoma (asterisk) in the basal inferolateral segment of the left ventricle, protruding into the cavity. Arrow points to the mitral valve.

LA = left atrium; LV = left ventricle; RA = right atrium; RV = right ventricle

## Comment

Hepatocellular carcinoma, the most prevalent primary hepatic malignancy,<sup>1</sup> typically metastasizes to the abdominal lymph nodes, lungs, and bones, chiefly via vascular invasion.<sup>2</sup> The right atrium is often involved; conversely, metastases to the LV are extremely rare.<sup>2-4</sup> The usual mechanism for right atrial involvement is direct invasion of the vasculature with extension through the inferior vena cava.<sup>3</sup> In our patient, the possible causes of LV involvement were hematogenous spread or tumor invasion via the pulmonary veins.<sup>5</sup> Many right atrial metastases of hepatocellular carcinoma have presented as right-sided heart failure<sup>6</sup>; however, despite the size and extent of our patient's tumor, the only cardiac manifestations were atrial fibrillation and troponin I elevation. Electrocardiographic changes caused by cardiac tumors are usually nonspecific, although heart block, ventricular hypertrophy, bundle branch block, and atrial arrhythmias may be present.<sup>7</sup>

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