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Right Atrial Metastasis from Hepatocellular Carcinoma Leading to Submassive Pulmonary Embolism: An Uncommon Clinical Presentation

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Background

Cardiac tumors are relatively rare and can occasionally be detected on echocardiography but are often found incidentally on autopsy. Typically, primary cases are benign tumors such as myxomas, rhabdomyomas, or lipomas [1]. Most commonly, cardiac tumors are metastatic in nature. The most common primary sources include lung, mesothelioma, skin, and melanoma [2]. Rarely, hepatocellular carcinoma (HCC) can metastasize to the heart via direct tumor spread through the vena cava. We present an unusual case of HCC metastasized to the right atrium and subsequently caused embolic phenomenon and resulted in a submassive pulmonary embolism.

Case Description

We present the case of a 42-year-old male with a past medical history of hepatitis B and recently diagnosed HCC who initially presented for worsening abdominal distension. He was found to have a CT abdomen (Figure 1) with tumor extending in the inferior vena cava (IVC) into the right atrium. Magnetic resonance cholangiopancreatography (MRCP) (Figure 2) demonstrated worsening tumor burden. During the hospitalization, he developed sudden dyspnea and CTA thorax (Figure 3) demonstrated bilateral pulmonary embolism. Echocardiography (Figure 4) demonstrated a large mass compatible with known extensive tumor burden. The patient was started on heparin and was not a candidate for mechanical thrombectomy given extensive atrial and caval involvement. Unfortunately, the patient had progressive respiratory failure and died.

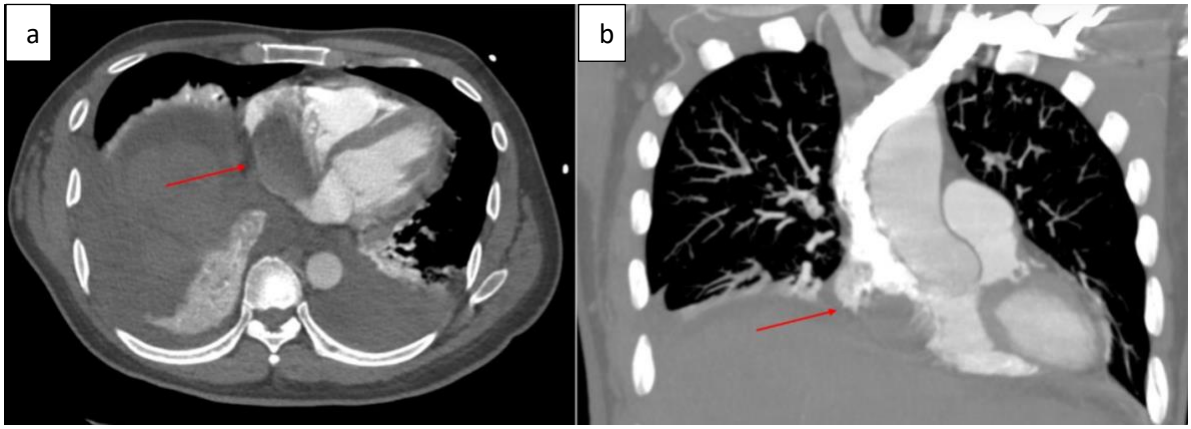

Figure 1 (a): CT demonstrating hepatic mass traveling along inferior vena cava into right atrium; **(b):** angiography with opacification in right atrium consistent with mass.

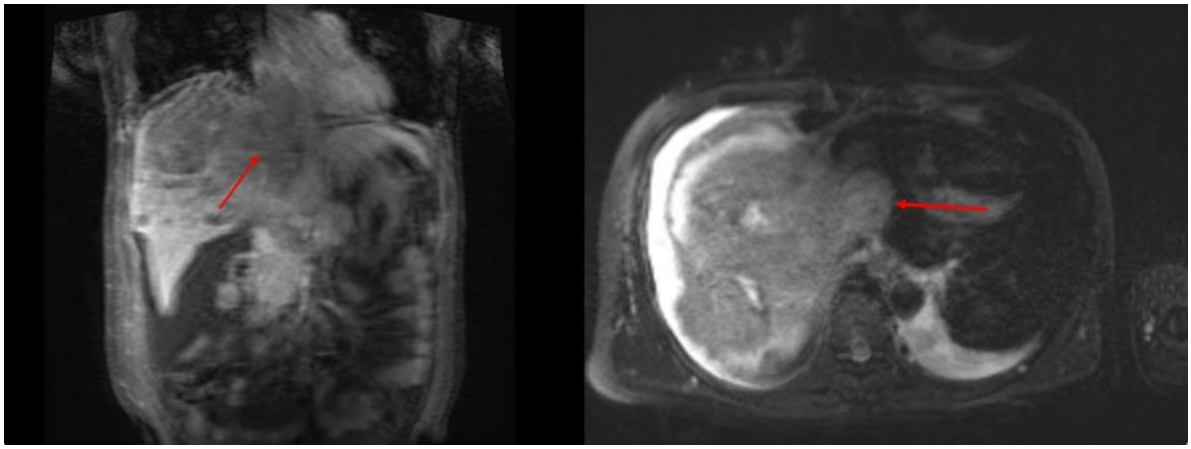

Figure 2: MRCP with evidence of mass involving inferior vena cava with infiltration into the right atrium.

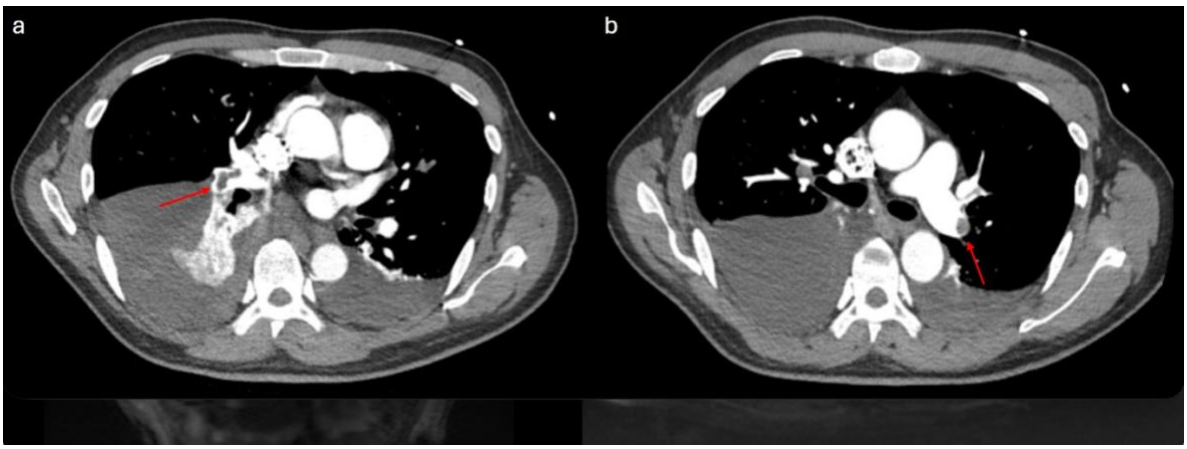

Figure 3: CT angiography demonstrating bilateral pulmonary embolism involving distal right **(a)** and distal left **(b)** pulmonary arteries.

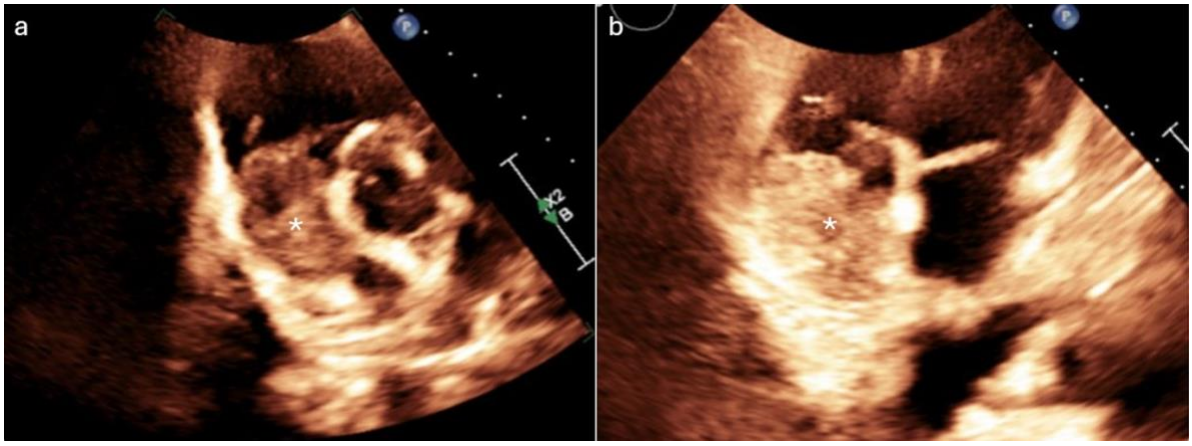

Figure 4 (a): Parasternal Short Axis (PSAX) at level of aortic valve with large mass in right atrium;
(b): Apical 4 chamber (A4C) with large mass occupying 90% of atrial space.

Conclusion

This case demonstrates a rare case of advanced HCC that had direct hematogenous spread through portal veins into IVC. In this patient's case, the burden was so significant that it extended into the right atrium.

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