

## MAKING THE COMMON, UNCOMMON: RIGHT VENTRICULAR INTRACAVITARY METASTASIS OF NON-SMALL CELL LUNG CANCER

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Case Vignette

**Introduction:** Cancer metastasis to the heart, including metastases to the pericardium, myocardium, and great vessels is seen in up to 9% of patients with known malignancies. However, clinical manifestations of metastasis are often missed as symptoms can be nonspecific and are dependent on tumor burden and location. Of those cancers that metastasize to the heart, the most prevalent primary malignancies are hematological, breast, and lung cancers, with the pericardium and epicardium as the most frequent sites of involvement. Here we present a rare case of intracavitary spread of non-small cell lung cancer.

**Case:** A 67-year-old male with a past medical history of stage IB adenocarcinoma of the right upper lobe of the lung status post segmentectomy, peripheral vascular disease, and chronic obstructive pulmonary disease was brought to the emergency department after a fall. The patient on admission was found to be hemodynamically stable and underwent a trauma evaluation. Computerized tomography (CT) imaging revealed new-onset diffuse brain metastasis, a new right lower lobe mass measuring 7.2 cm x 5.0 cm, new bilateral lung nodules, new liver lesions, and a new filling defect seen within the right ventricle. Further investigation of this filling defect with an echocardiogram (ECHO) revealed a large, irregular intracavitary mass in the right ventricle extending through the tricuspid valve [Fig 1]. Given concern for mass embolization, Cardiothoracic surgery was consulted. Based on ECHO findings, it was concluded that the right ventricular mass was not resectable because the patient was a poor candidate for surgery or vacuum-based venous drainage cannulas for tumor debulking, such as AngioVac™. Ultimately, conservative medical therapy was recommended. The patient's hospitalization course was further complicated by bacteremia for which a transesophageal echocardiogram (TEE) was obtained. The TEE revealed moderate to severe tricuspid regurgitation and multiple masses within the right ventricle and right ventricular outflow tract [A-F on Fig 2, Fig 3]. Of the masses visualized, some were adherent to the endocardial wall and some possessed mobile components. Biopsy of the lung mass revealed non-small cell lung cancer. The patient was subsequently discharged with close Oncology follow-up and plans for systemic chemotherapy initiation with Paclitaxel and Carboplatin.

**Discussion:** The incidence of cardiac involvement of metastatic tumors has increased over the last 30 years. Intracavitary metastasis, as seen in this patient, remains exceedingly rare and comprises less than 3-5% of all cardiac metastasis cases recorded. Of reported cases, tumors with partial or total intracavitary growth were frequently noted to be covered by thrombotic material with a high potential for embolization. In severe cases, intracavitary metastasis led to cardiogenic shock due to right ventricular outflow tract obstruction and right heart failure. As seen in the case described, patients with a heavy tumor burden who are found to have intracavitary lesions are at high risk for clinical deterioration. This case highlights the importance of a prompt, multidisciplinary approach to disease management.

