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Atypical Presentation of STEMI with Cardiac Tamponade Related to Malignancy

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Abstract

Cardiac tamponade and myocardial infarction are rare as the initial presentation of a malignancy. Here, we describe a case with an atypical presentation of a myocardial infarction due to a thrombus in the right coronary artery occurring in the setting of a pericardial effusion causing tamponade physiology related to malignancy. We present this unique case of myocardial infarction and cardiac tamponade as this was not caused by a type-A aortic dissection. In conclusion, we suggest that malignancy be considered in the differential diagnosis when these findings present together.

Intro

Cardiac tamponade and myocardial infarction are rare as the initial presentation of a malignancy. Lung cancer is among the most common sites from which cardiac metastases arise[1,2]. The majority of cases of neoplastic pericardial disease are not detected or diagnosed antemortem due to the usual lack of clinical symptoms[3]. Cardiac metastases most commonly occur between ages 50-70, notably via lymphatic and hematogenous dissemination[4,5]. Tumor cells also have the ability to activate the coagulation system causing a prothrombic or hypercoagulable state to develop throughout the course of malignancy[6].

Case Description

A 57-year-old man with a past medical history of hypertension, hyperlipidemia, tobacco abuse of 45+ years, anemia, infra-renal abdominal aortic aneurysm with a chronic mural thrombus, and a skin lesion on his nose presented with shortness of breath of 2 months duration, productive cough with clear-white sputum, and recent 20-pound weight loss.

His ECG showed an acute inferior ST-segment elevation myocardial infarction (STEMI) with possible right ventricular (RV) involvement (III>II), and although troponins were initially trending downward, they began to trend upward. His echocardiogram showed that he had a large pericardial effusion with tamponade physiology. After diagnosis of the STEMI with cardiac tamponade, the patient underwent CT angiography (CTA) to rule out aortic dissection prior to pericardiocentesis and catheterization.

The CTA came back negative for aortic dissection, but showed that he had a medial right upper lobe spiculated lung nodule measuring 1.2 x 1.4 x 1.2 cm. Pulmonology and Oncology were consulted, and he was sent to the catheterization lab where he underwent pericardiocentesis and placement of a drainage tube that drained 1190 mL of sanguineous fluid at the time of the puncture. Immediately following the pericardiocentesis, percutaneous coronary intervention (PCI) was performed and a drug-eluting stent was placed in the mid right coronary artery, which was found to be 100% occluded. The patient remained hypotensive, had RV hypokinesis, and had fluid re-accumulation in the pericardium. Cardiothoracic surgery then placed a pericardial window and chest tube for continued drainage of fluid.

Pathology of the pericardial fluid reported positive for metastatic adenocarcinoma with lymphovascular invasion. Due to TTF1 positivity, pulmonary origin is favored.

The patient progressed and the chest tube was discontinued. A repeat echocardiogram did not show any significant effusion. He desaturated enough to require home oxygen. He was discharged with a strong recommendation for outpatient follow-up with concern for malignancy and continued work-up of such.

Discussion

It is curious that the patient had both a myocardial infarction and pericardial effusion with tamponade physiology at the same time. Metastases to the heart are rare, as are myocardial infarction and cardiac tamponade in the setting of metastatic cancer as the initial presentation[1,2,7]. Usually this presentation is consistent with a type-A aortic dissection affecting the coronary artery by causing coronary malperfusion along with pericardial effusion and tamponade[8]. This was considered and ruled out in this patient, making this a very unusual presentation.

To our knowledge, this is the first reported case of a STEMI due to thrombus formation with pericardial effusion causing tamponade physiology related to malignancy. It is hypothesized that the patient likely had undiagnosed lung cancer leading to metastatic spread to the heart causing pericardial effusion and tamponade. It is suspected that the patient had a myocardial infarction due to the prothrombotic nature of his lung malignancy. We present this unique case of myocardial infarction and cardiac tamponade as this was not caused by a type-A aortic dissection. In conclusion, we suggest that malignancy be considered in the differential diagnosis when these findings present together.

Disclosures

The authors have no conflicts of interest or financial disclosures.

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