Oncology

Rare presentation of urothelial bladder carcinoma as cardiac tamponade

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1. Introduction

Bladder carcinoma is the fourth most common cancer in men, however cardiac metastases from the bladder are exceedingly rare. There have been 5 documented cases of transitional cell carcinoma causing cardiac tamponade. There have been 3 documented cases of urothelial carcinoma presenting as cardiac tamponade with positive cytology.1–3 We will discuss a case in which pericardial effusion with tamponade was the initial presentation of the patient’s transitional cell carcinoma of the bladder.

2. Case

Our patient is a 70 year old Caucasian male with a history of hypertension and hyperlipidemia who initially presented to his PCP’s office for progressively worsening dyspnea and chest pain. A plain film of the chest showed evidence of new effusion, and given worsening clinical status patient was referred to the ER for further evaluation. Initial exam revealed a patient in moderate respiratory distress and tachypnea with a RR of 22, tachycardia with a HR of 104 and hypotension with a BP of 84/55, with an SpO2 94% and temp of 96.4F. Patient was given IVF to which he did not respond; a bedside US showed a large pericardial effusion with evidence of cardiac tamponade physiology for which an emergent pericardial window was performed. Patient had a chest tube placed as well. Fluid from both sites were suggestive of exudative effusions, and were sent for cytology. A CT c/a/p was done which revealed a large (7.3 cm × 5.7 cm × 5.4cm) exophytic, peripherally calcified mass inside the bladder with diffuse abdominal, mediastinal and axillary lymphadenopathy with a large left pleural effusion. Fig. 1 demonstrates the large bladder mass as well as the heterogeneous and calcified components, while Fig. 2 shows an exophytic protrusion of the mass through the dome of the bladder. Fig. 3 shows prominent pelvic and retroperitoneal lymphadenopathy. Patient had progressively worsening dyspnea refractory to diuresis and was started on corticosteroids due to concern for lymphangitic carcinomatosis. Unfortunately, patient’s respiratory status was deemed too tenuous to tolerate any potential sedation for a diagnostic procedure for tissue biopsy. Given worsening clinical status,
patient’s code status was changed to comfort care and expired 6 days into his hospital course. Cytology on fluid from both the pericardium and left pleural effusion was positive for malignancy—transitional cell carcinoma.

3. Discussion

Bladder cancer is the ninth most common cancer worldwide and the fourth most common cancer in men. There are approximately 77,000 cases diagnosed each year and 16,000 deaths from bladder cancer each year. However, malignant pericardial effusion caused by urothelial carcinoma is exceedingly rare. Urothelial carcinoma usually follows predictable lymphatic metastatic patterns, with bones, lung, liver, and peritoneum commonly affected. Similarly, it is not uncommon for pericardial effusion to be the result of malignancy, with lung CA, breast CA, lymphoma, and leukemia as cancers most commonly affecting the pericardium. Ours is only the fifth case of cardiac tamponade caused by urothelial carcinoma. In all of the other cases of primary bladder cancer, the patient had a known urothelial carcinoma at the time of presentation with cardiac tamponade. In our case, cardiac tamponade was our patient’s initial presentation that prompted diagnosis of urothelial carcinoma of the bladder.

Transitional cell carcinoma classically presents as painless hematuria. Pain due to local invasion and urinary symptoms, such as dysuria, frequency, and incontinence, are also common presenting symptoms. For a patient with hematuria, urothelial carcinoma should be considered, with increasing suspicion for patients with older age, smoking history, industrial exposure history, male sex, and especially in the presence of palpable pelvic mass on physical exam. Cardiac tamponade presents with shortness of breath and is associated with several physical exam findings: low arterial blood pressure, jugular venous distention, muffled heart sounds, and tachycardia. Also, large decrease in systolic BP upon inspiration, known as pulsus paradoxus is a classic finding in tamponade. Malignancy is the cause of 13–23% of pericardial effusions, so once the diagnosis of pericardial effusion is established, it is important to investigate the underlying pathology through pericardial fluid analysis and cytology.

Workup for transitional cell carcinoma typically includes cystoscopy, urinalysis, and imaging (CT urogram or Intravenous Pyelogram). Prognosis is dependent on stage at presentation, with 5 year survival for stage 1 transitional cell carcinoma as high as 85% compared with 15% for stage 4 disease. This case is only the fifth reported case of transitional cell carcinoma presenting with cardiac tamponade and the fourth such case arising from a primary tumor of the bladder. In most of these cases, there was a visible metastatic lesion within the heart. In our case, there was no cardiac lesion seen. What eventually caused our patient’s demise was respiratory compromise due to lymphangitis carcinomatosis from the bladder. Lymphangitis carcinomatosis is the presence of malignant cells within the lymphatics of the lungs. This entrapment of malignant cells causes lymphatic obstruction resulting in progressive pulmonary edema.

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