

A HEART TOO BIG FOR ITS OWN GOOD

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INTRODUCTION

Pericardial Effusion is a phenomenon that occurs when there is excess fluid between the heart and the sac surrounding the heart called the pericardium. This can result from different conditions and can be acute or chronic. Etiologies are numerous and include, procedural complications, infection, neoplasms, autoimmune connective tissue disorder, medication (hydralazine), thyroid disease, and infarct to name a few.

The condition is discovered on chest xray, CAT scan or echocardiogram, which often can be incidental. With small effusions, patients have no symptoms. As fluid builds up, patient start experiencing symptoms of chest pain, shortness of breath, nausea, with worsening symptoms including change in mental status, hypotension, and ultimately shock. The worst complication of this is called cardiac tamponade which is severe compression of the heart that impairs ability to function properly. This can be life threatening and requires urgent drainage of fluid.

Common imaging for this condition include chest xray, CAT scan of the chest, and echocardiogram. Echocardiogram, in particular looks at collapse in cardiac walls, which shows growing concern for cardiac tamponade. If warranted, pericardiocentesis is the treatment of choice.

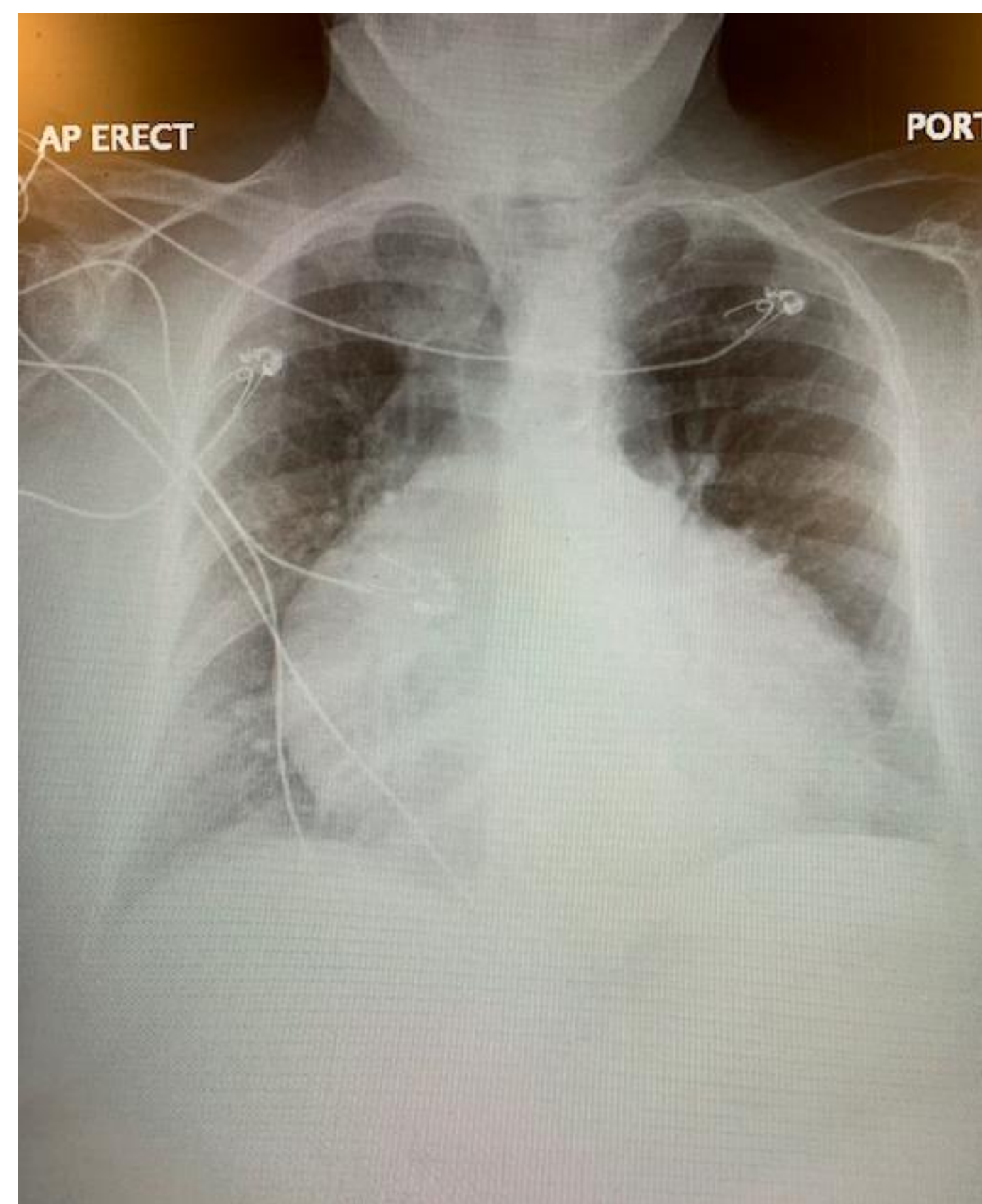
PATIENT CASE PRESENTATION

This is a 78 year old female with past medical history of hypertension, multiple myeloma Stage 3 IgA kappa (diagnosed in 2016, failed multiple treatments, coronary artery disease that came to the hospital for shortness of breath going on for 2 days with increased daily usage of albuterol.

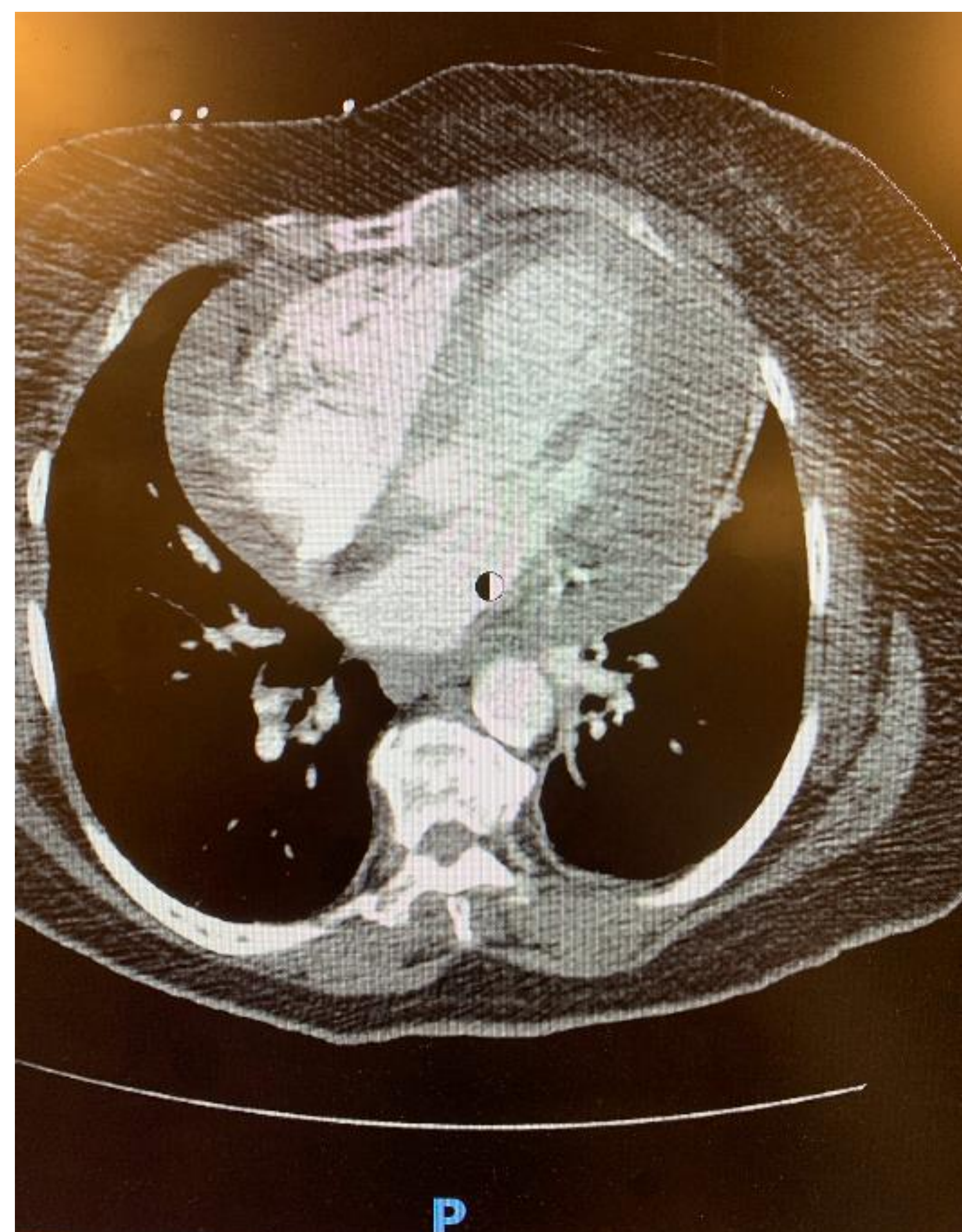
Patient was diagnosed with Multiple Myeloma in 2016 after finding of maxillary plasmacytoma. She had been through multiple chemo cycles and radiation, but treatments failed. On this admission she was on melphalan and prednisone and if this fails she would progress to xgeva/zometa.

DIAGNOSTICS

Chest xray showed presence of cardiomegaly



CAT SCAN of the chest showed a large pericardial effusion



Echocardiogram showed a large circumferential pericardial effusion. There was early evidence of cardiac tamponade with right atrial and left atrial collapse.

PATHPHYSIOLOGY

Fluid, such as serous material, blood, pus, and chyle, accumulates by way of inflammation secondary to infection, trauma causing bleeding into pericardial space, decreased drainage of pericardial fluid, and mechanisms involved in CHF and cirrhosis, for example.

The outer layer of the heart is made of fibrous tissue that does not easily stretch, thereby causing increasing pressure in the pericardial space as fluid accumulates. Increased pressure depends on amount of fluid in the space, rate of accumulation, and compliance of pericardium

Increased pressure causes compression of cardiac chambers which impairs diastolic filling in both ventricles. On one side this increases venous pressure which leads to pulmonary congestion, jugular venous distention, and peripheral edema. On the other side, this decreases stroke volume and cardiac output leading to hypotension and shock. The later is seen in cardiac tamponade.

MANAGEMENT AND FOLLOW UP

Patient became hypotensive and unresponsive to volume and therefore transferred to ICU, awaiting transfer to Jefferson. Patient underwent pericardiocentesis that drained 185cc of bloody fluid and had a pericardial drain placed. Cytology results of pericardial fluid was positive for plasma cells, indicating cause of her pericardial effusion is due to Multiple Myeloma. She received pericardial sclerosing therapy with doxycycline which was complicated with neutropenic fever and placed on broad spectrum antibiotic without source of infection. Patient underwent repeat TTE which showed no signs of reoccurrence of pericardial effusion.

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