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Diagnostic Dilemma

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Questions:

- 1) A 37 year old female is admitted with increasing dyspnea and orthopnea of 1 week duration. She had received chemotherapy and radiation for breast cancer 1 year ago. On exam she has elevated JVP and diminished breath sounds at bases. Bilateral lower extremities have 2+ pitting edema. Which of the following conditions could be the potential culprits leading to this presentation?
 - A) Cardiac Tamponade
 - B) Dilated Cardiomyopathy
 - C) Constrictive Pericarditis
 - D) Restrictive Cardiomyopathy
 - E) All the above

- 2) A 68 year old male with history of hypertension was admitted with a blood pressure of 220/120 mm/Hg. He has been on treatment for hypertension and has a known history of paroxysmal atrial fibrillation and coronary artery disease. His home medications include amiodarone, amlodipine, aspirin, losartan and hydrochlorothiazide. He was diagnosed with hypertensive urgency and treated with labetalol. Which of the following is the least likely cause of hypertensive urgency in this patient?
 - A) Drug induced hypertension
 - B) Primary Hyperaldosteronism
 - C) Renal artery atherosclerosis
 - D) Fibromuscular dysplasia

- 3) A 32 year old female presented to ER with progressively increasing shortness of breath. She also reported orthopnea, paroxysmal nocturnal dyspnea and increased swelling in her legs. She is 30 weeks pregnant and has not received any prenatal care so far. She recently immigrated from Southeast Asia. An emergent chest x-ray done in ER showed pulmonary edema and normal heart size. She received intravenous furosemide in the ER with good relief of her symptoms. Which of the following findings is not likely to be present on physical examination?
- A) Loud first heart sound
 - B) Mid diastolic murmur at the apex
 - C) Holo-systolic murmur at left lower sternal border
 - D) Ejection systolic murmur at right upper sternal border

Answers on page: 7

ASK A PATHOLOGIST

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QUESTION: I have heard about the recent increase in *Paragonimus kellicotti* infections in Missouri. If I am suspicious of this diagnosis in one of my patients, how can I test for it?

ANSWER: *Paragonimus kellicotti*, also known as the North American lung fluke, is a parasitic trematode which uses snails and crustaceans as intermediate hosts. Human infections have previously been rare, with only 7 cases reported between 1968-2008. Recently, the number of reported cases in Missouri has increased: three cases were reported in 2009, and an additional six cases from the St. Louis area were reported during 2009-2010. All nine of these patients had been involved in recreational activities on various Missouri rivers prior to their infection and had consumed raw or undercooked crayfish.

The symptoms of Paragonimiasis infection are nonspecific and onset of symptoms occurs 2-12 weeks after crayfish ingestion, so a high level of suspicion is required to make an accurate diagnosis. The median time to correct diagnosis in this series of nine patients was 12 weeks. The most common signs and symptoms included cough (100%), fever (88.9%), and eosinophilia (100%). Additional symptoms included fatigue, headache, shortness of breath, chest pain, and weight loss. All nine patients had a pleural effusion on chest x-ray. Initial diagnoses included pneumonia, bronchitis, influenza, gastroenteritis, acute cholecystitis, and pulmonary embolism. Malignancy and tuberculosis may also be considered in the initial differential diagnosis.

To confirm the diagnosis of *Paragonimus kellicotti* in a patient with suspected infection, several testing options are available. Sputum for ova and parasite testing is very specific when characteristic operculate ova are present; unfortunately, the ova may only be present intermittently so sensitivity

Diagnostic Dilemma

Answers:

1) E

- The patient has symptoms and signs suggestive of congestive heart failure. The patient in the vignette is at risk for all the mentioned conditions due to breast cancer and its treatment.
- Cardiac tamponade can develop from metastasis of breast cancer to pericardium. Most common malignancies to metastasize to the pericardium are lung and breast cancer.
- Dilated cardiomyopathy is a known complication of treatment with anthracycline derivatives (Doxorubicin) or trastuzumab, which are often used to treat breast cancer.
- Radiation therapy to chest is associated with constrictive pericarditis, which often presents with symptoms of heart failure.
- Mediastinal irradiation is associated with restrictive cardiomyopathy which often stems from myocardial fibrosis.

2) D

- Fibro-muscular dysplasia is a common cause of secondary hypertension in young adults, but not in the elderly. So it is unlikely to be the cause of secondary and resistant hypertension in this 60 year old gentleman.
- Amiodarone use has been linked to hyperthyroidism, and patients, especially the elderly, can present with cardiovascular manifestations like resistant hypertension, atrial fibrillation with poor rate control and unexplained tachycardia.
- Presence of atherosclerotic vascular disease in other vascular territories is a risk factor for atherosclerotic renal artery stenosis, which can lead to secondary hypertension.
- According to the recent data, primary hyper-aldosteronism may be present in up to 10% of patients with resistant hypertension.

3) D

- This patient has presented with symptoms of heart failure in the third trimester of her pregnancy. In a young patient of Southeast Asian origin, who has recently migrated to USA, a serious consideration should be given to rheumatic heart disease, even though it is seen less frequently now. Patients with rheumatic heart disease sustain chronic damage to heart valves and often develop mitral stenosis. Some of these patients present with symptoms of overt heart failure in the third trimester of pregnancy when there is a physiological increase in plasma volume. Classic physical exam findings in mitral stenosis include loud first heart sound and a mid-diastolic rumble at the apex.
- A holo-systolic murmur at the left lower sternal border denotes a functional tricuspid regurgitation that results from increased pulmonary pressures related to mitral stenosis.
- An ejection systolic murmur at right upper sternal border is seen in aortic valve stenosis and is unexpected in this young patient.