

## **XII. Hypertensive Urgencies and Emergencies:**

Mark Fagan

### *Case 1*

#### **SCENARIO:**

**You are in the emergency room picking up a new admission with cellulitis. The medical admitting resident asks you to see a patient who has just come to the emergency room with a chief complaint of headache and “way high” blood pressure. The resident asks you to evaluate the patient to make sure that this isn’t a hypertensive emergency.**

**Question 1: What is the definition of hypertensive emergency and what implications does this have for initial treatment?**

*Answers: Hypertensive emergencies are characterized by severe hypertension (>180/120 mm Hg) in association with target organ dysfunction such as hypertensive encephalopathy, intracerebral hemorrhage, acute myocardial infarction, acute left ventricular failure with pulmonary edema, unstable angina, dissecting aortic aneurysm, acute renal failure, microangiopathic hemolytic anemia or eclampsia. Other hypertensive emergencies include pheochromocytoma crisis, food or drug interactions with monoamine-oxidase inhibitors, sympathomimetic drug use (cocaine) and rebound hypertension after abrupt cessation of some antihypertensive drugs such as clonidine. Hypertensive urgencies, on the other hand, are characterized by severe hypertension without target organ dysfunction.*

*With hypertensive emergencies, the initial treatment goal is to rapidly (over 1-6 hours) lower the diastolic blood pressure to 100-110 mm Hg. Treatment is generally given intravenously with close monitoring of blood pressure, often in an intensive care unit setting. In contrast, with hypertensive urgencies, the goal is to lower the blood pressure more slowly, over 24-48 hours.*

**Question 2: What parts of the history would be particularly important when evaluating this patient?**

*Answers:*

*\*Blood pressure history, including medications, especially medications recently discontinued*

*\*Symptoms indicating target organ dysfunction, including headache, blurred vision, chest pain, dyspnea, edema, hematuria*

*\*Use of MAO inhibitors, cocaine*

*\*Pregnancy (eclampsia)*

**The patient is a 55 year old woman who immigrated to the United States from Liberia 2 months ago. She states that she was first diagnosed with hypertension 15 years ago, was treated with blood pressure medicine in Liberia intermittently, but**

has had no antihypertensive treatment for the past 6 months. She states that she has a severe bifrontal headache which began 3 days and has gotten progressively worse. She notes blurred vision and states that she feels like she's in a fog. She reports no chest pain, dyspnea, or change in urine color. She does not smoke, drink alcohol, or use illicit drugs, and she is taking no prescribed or over the counter medications.

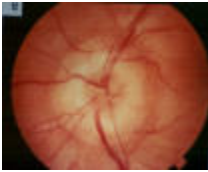
A nurse informs you that the patient's blood pressure is 250/140 mm Hg.

**Question 3: What parts of the physical examination are particularly important in evaluating with severe hypertension?**

- \*Take BP in both arms*
- \*Fundoscopic exam for hemorrhages, exudates, papilledema*
- \*Assess jugular venous pressure*
- \*Lung exam for signs of pulmonary edema*
- \*Heart exam for S3, S4*
- \*Check for edema*
- \*Neurologic exam*

On your examination, blood pressure is 250/140 mm Hg in both arms.

**Fundoscopy exam is shown below:**



**Jugular venous pulse is 6 cm above the sternal angle.**

**Lungs exam shows crackles at both bases.**

**Heart exam reveals an S4.**

**There is pitting edema of the ankles.**

**Question 4: Does this patient meet the definition for hypertensive emergency?**

*Answer: Yes. (Severe hypertension associated with neurologic symptoms, papilledema, and evidence of congestive heart failure.)*

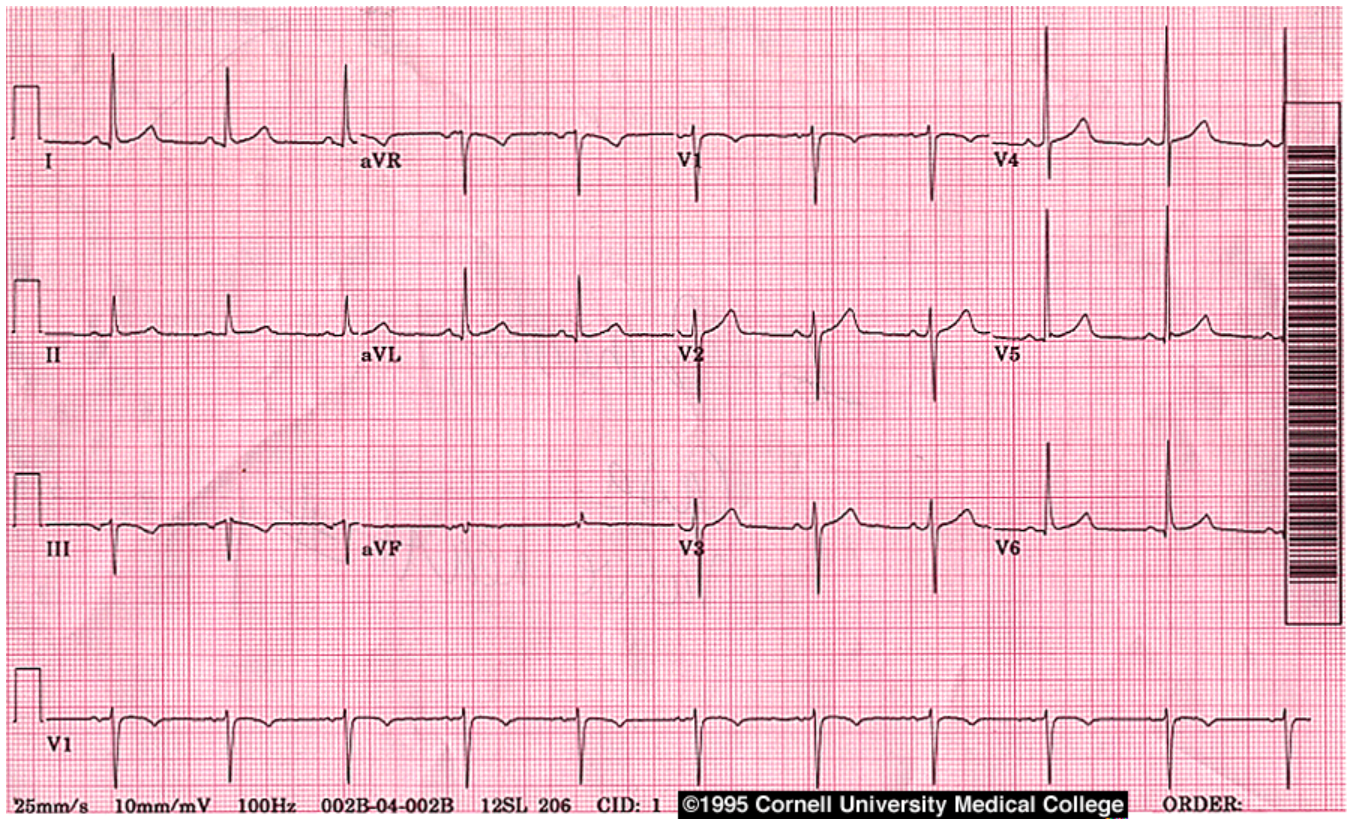
**Initial lab results:**

Na 135	Cl 105	BUN 24
K 4.5	HCO <sub>3</sub> 22	Cr 1.8

**CBC Normal**

**U/A 0 RBC  
0 WBC  
Negative for protein**

**EKG:**



**The patient's chest radiograph is shown below.**



**Question 5: You call your resident to discuss initial drug treatment. What are the options? What would you use in this setting?**

*Answers: In general, a patient with a hypertensive emergency in the setting of congestive heart failure should be treated with an intravenous loop diuretic such as furosemide and an intravenous vasodilator. This patient with impaired renal function would be at increased risk for cyanide toxicity from the vasodilator nitroprusside. In general, drugs that increase heart rate (hydralazine) or decrease cardiac contractility (labetolol or other beta blockers) should be avoided in the setting of hypertensive emergency and heart failure. Possible choices for this situation would include intravenous nitroglycerin, the intravenous ACE inhibitor enalaprilat or the newer drug fenoldopam.*

**Question 6: What would be the target blood pressure?**

*Answer: The goal is to lower the diastolic blood pressure to 100-110 mm Hg within 1-6 hours.*