

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

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### ***Specific Learning Objectives***

#### **Knowledge.**

Subinterns should be able to:

1. Define hypertensive emergency and describe the signs and symptoms of conditions associated with it:
  - a. Hypertensive encephalopathy
  - b. Acute congestive heart failure
  - c. Acute aortic dissection
  - d. Eclampsia
  - e. Acute coronary syndromes
  - f. Acute renal failure
  - g. Food or drug interactions with monoamine oxidase inhibitors
  - h. Drug ingestion (cocaine, amphetamine, phencyclidine) or withdrawal (antihypertensive agents, especially clonidine)
2. Describe the mechanism of action, routes of administration, dose, time of action and uses of the following drugs in the treatment of the above hypertensive emergencies:
  - a. Nitrates: nitroprusside and nitroglycerine
  - b. Beta-blockers including labetalol
  - c. Fenoldopam
  - d. Hydralazine
  - e. Diazoxide
  - f. Phentolamine
3. Describe the concept of blood pressure autoregulation
4. Describe short term blood pressure goals for patients with hypertensive emergencies and urgencies
5. Describe situations where inpatients may have elevated blood pressure (pain, alcohol withdrawal, drug ingestion, medication effect, drug interaction)

#### **Skills.**

Subinterns should be able to:

1. Obtain and interpret a history of symptoms that could indicate hypertensive emergency (chest pain, headache, blurred vision, dyspnea, change in mental status, hematuria)
2. Identify and interpret physical findings relevant to hypertension (hypertensive retinopathy, papilledema, elevated jugular venous pressure, lung crackles, S3, S4, edema)
3. Develop a management plan:
  - a. Choose antihypertensive therapy for patients with hypertensive emergencies and urgencies
  - b. Identify abnormal EKG findings including ischemia, and left ventricular hypertrophy

- c. Appropriately seek the assistance of supervising housestaff in a timely manner

### *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?**

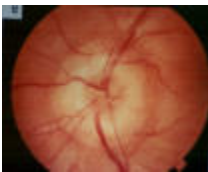
**Question 2: What parts of the history would be particularly important when evaluating this patient?**

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?**

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?**

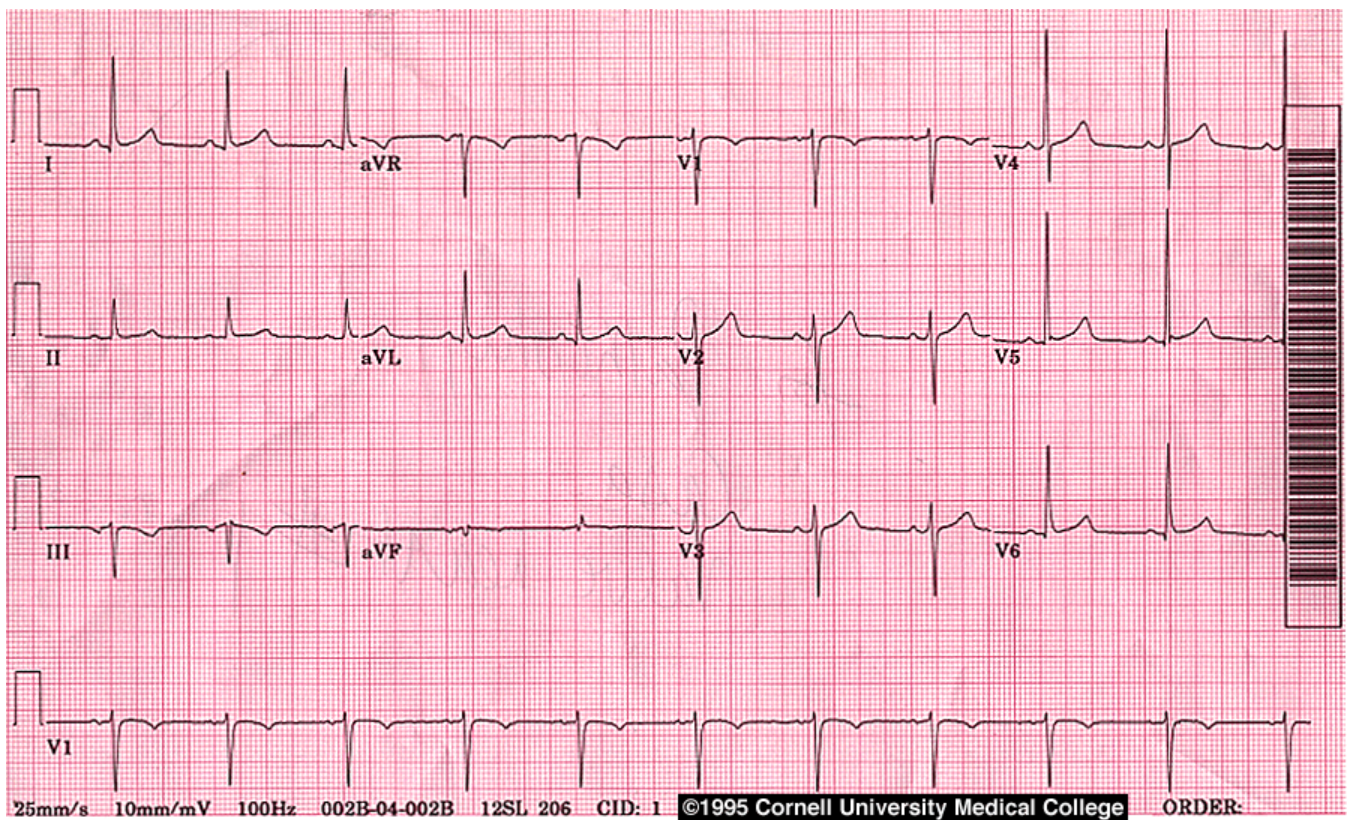
**Initial lab results:**

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?**

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

***References:***

Chobanian A et al. Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and treatment of High Blood Pressure. Hypertension 2003, 42:1206-1252.

Murphy MB, Murray C, Shorten GD. Drug Therapy: Fenoldopam- A Selective Peripheral Dopamine-Receptor Agonist for the Treatment of Severe Hypertension. NEJM 2001, 345:1548-1557.

Varon J, Marik PE. The Diagnosis and Management of Hypertensive Crises. Chest 2000, 118:214-227.