# Hypertensive Urgency in Children

## Revision Sheet for 4th Year Medical Students

Prepared by: Ahmad Reza Abbasi

Supervised by **Dr. Amir Naghshzan ( AmirNaghshzan@gmail.com )**

# Definition

Hypertensive Urgency is a severe elevation of blood pressure without acute target-organ damage.

In children:

- BP ≥ Stage 2 hypertension level
- Severe hypertension is commonly defined as:
  - BP ≥ 95th percentile + 30 mmHg
  - OR BP > 180/120 mmHg in adolescents

### Key Difference

| Hypertensive Urgency | Hypertensive Emergency | Urgency | Emergency |
|---|---|---|---|
| Severe BP elevation | Severe BP elevation | No acute target-organ damage | Acute target-organ damage present |
| Oral medications | IV medications | Gradual BP reduction | Controlled BP reduction in ICU |

Target-organ damage includes:

- Hypertensive encephalopathy
- Seizures
- Heart failure
- Acute kidney injury
- Papilledema or retinal hemorrhage

# Clinical Features

Many children are asymptomatic.

### Common Symptoms

- Headache
- Dizziness
- Irritability
- Fatigue
- Nausea or vomiting
- Blurred vision
- Epistaxis

### Physical Examination

- Repeated elevated BP measurements
- Tachycardia
- Obesity
- Growth retardation
- Cardiac murmur
- Signs of renal disease

# Important Causes of Severe Hypertension in Children

### Renal Causes (Most Common)

- Chronic kidney disease
- Acute glomerulonephritis
- Reflux nephropathy

### Renovascular

- Renal artery stenosis

### Cardiovascular

- Coarctation of the aorta

### Endocrine

- Pheochromocytoma
- Hyperthyroidism
- Cushing syndrome
- Primary hyperaldosteronism

### Drugs

- Corticosteroids
- Oral contraceptives
- Sympathomimetics
- Calcineurin inhibitors

### Others

- Obesity
- Obstructive sleep apnea

# Initial Evaluation

01

## Step 1: Confirm Blood Pressure

- Correct cuff size
- Measure BP in both arms
- Repeat measurements after rest

02

## Step 2: Evaluate for End-Organ Damage

Look for:

- Neurological symptoms
- Heart failure
- Visual abnormalities
- Renal impairment

03

## Step 3: Initial Investigations

- Urinalysis
- BUN and serum creatinine
- Electrolytes
- Renal ultrasound
- ECG or echocardiography
- Fundoscopy

Additional endocrine tests if clinically indicated.

# Management

## Main Principles

✓ Confirm that this is urgency, not emergency

✓ Lower BP gradually

✓ Avoid rapid BP reduction

✓ Identify and treat the underlying cause

## Blood Pressure Reduction Goal

- Gradual reduction over 24–48 hours
- Avoid rapid normalization
- Excessive BP reduction may decrease cerebral and renal perfusion

# Oral Antihypertensive Drugs

## Calcium Channel Blockers

**Amlodipine**

- Common first-line agent
- Well tolerated
- Once daily

## ACE Inhibitors

**Enalapril**

Useful especially in:

- Chronic kidney disease
- Proteinuria

Avoid in:

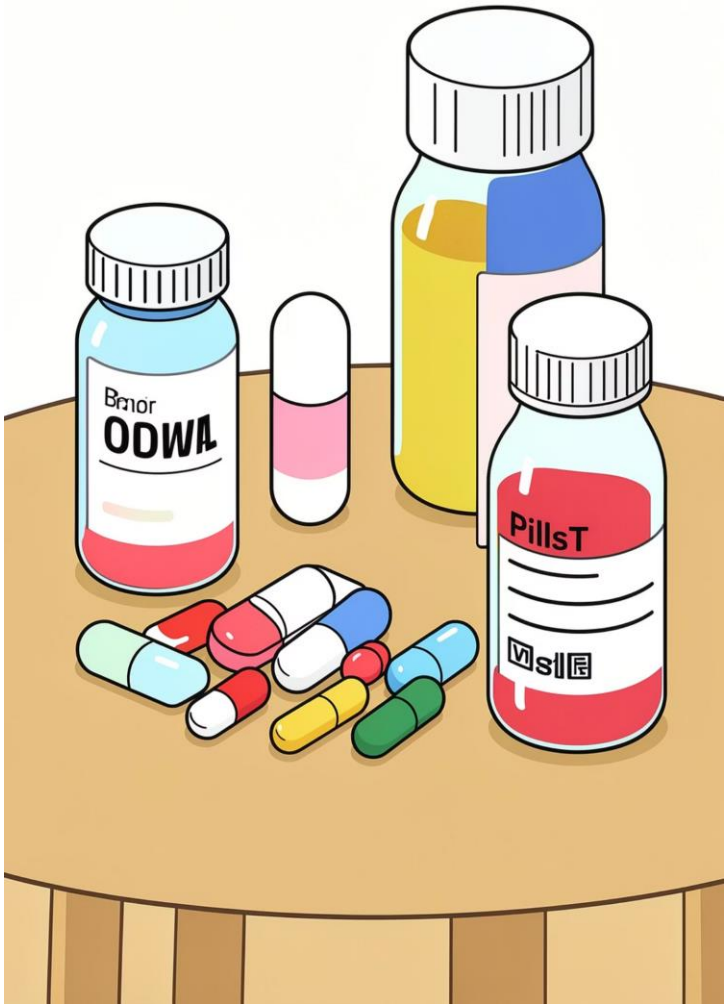
- Bilateral renal artery stenosis

## ARBs

Examples:

- Losartan
- Valsartan

Alternative to ACE inhibitors.



## Beta-blockers

Examples:

- Atenolol
- Metoprolol

Selected cases only.

## Diuretics

Use if:

- Volume overload
- Renal disease

Examples:

- Furosemide
- Hydrochlorothiazide

# Indications for Hospital Admission

Admit the child if:

- Suspected hypertensive emergency
- Neurological symptoms
- Heart failure
- Acute kidney injury
- Persistent severe hypertension
- Uncertain diagnosis
- Need for close monitoring

## Key Home Messages

1. Hypertensive urgency = Severe BP elevation WITHOUT acute target-organ damage.
2. The first clinical step is to exclude hypertensive emergency.
3. Renal disease is the most common cause of severe hypertension in children.
4. Lower BP gradually over 24–48 hours.
5. Never normalize BP rapidly.
6. Always investigate for an underlying secondary cause.