



Hypertension and Pheochromocytoma

What is Pheochromocytoma?

Pheochromocytoma is a rare, catecholamine-secreting tumor that arises from the adrenal medulla. It produces excess epinephrine and norepinephrine, leading to severe hypertension and other cardiovascular complications.

How Pheochromocytoma Causes Hypertension?

The tumor secretes excessive catecholamines (adrenaline & noradrenaline), which:

- ✓ Increase heart rate (tachycardia)
- ✓ Cause vasoconstriction → Raising blood pressure
- ✓ Stimulate the sympathetic nervous system, leading to paroxysmal (episodic) or sustained hypertension

Characteristics of Hypertension in Pheochromocytoma

1. Paroxysmal Hypertension (Sudden spikes in BP)

Episodes lasting minutes to hours

Triggered by stress, exercise, caffeine, or certain medications

2. Sustained Hypertension (Persistent high BP)

Continuous elevation due to chronic catecholamine release

3. Resistant Hypertension

Does not respond well to standard antihypertensive drugs

4. Orthostatic Hypotension

BP drops suddenly when standing, due to excessive catecholamine metabolism

Symptoms of Pheochromocytoma

Classic Triad:

Headache

Palpitations (rapid heartbeat)

Excessive sweating (diaphoresis)



Other symptoms include:

Anxiety or panic attacks

Tremors

Flushing or pallor

Unexplained weight loss

Diagnosis of Pheochromocytoma in Hypertensive Patients

1. Biochemical Tests:

24-hour urine metanephrines & catecholamines

Plasma-free metanephrines (high sensitivity test)

2. Imaging Studies:

CT/MRI of adrenal glands (to locate the tumor)

MIBG scan (Metaiodobenzylguanidine scan) for tumor confirmation

3. Clonidine Suppression Test:

Used when plasma metanephrines are borderline

In pheochromocytoma, catecholamines do not suppress with clonidine

Treatment of Pheochromocytoma-Associated Hypertension

✓ Definitive Treatment: Surgical removal (Adrenalectomy)

✓ Preoperative BP Control:

1. Alpha-blockers (e.g., Phenoxybenzamine, Prazosin) → First-line to control BP

2. Beta-blockers (Propranolol, Atenolol) → Used after alpha-blockade to control heart rate

3. Calcium Channel Blockers (Nifedipine, Amlodipine) → Additional BP control

✓ Avoid triggers: Caffeine, decongestants, stress, certain drugs (e.g., MAO inhibitors)