D.PHARM • SECOND YEAR

Pharmacotherapeutics

CHAPTER 2.1

Cardiovascular System

ENGLISH CHAPTER NOTES



DIPLOMA IN PHARMACY

HYPERTENSION

DEFINITION

Hypertension means persistently high arterial blood pressure.

Common clinic threshold (WHO): SBP ≥140 mmHg or DBP ≥90 mmHg, confirmed on separate occasions.

SBP = Systolic Blood Pressure DBP = Diastolic Blood Pressure

CLASSIFICATION: ACC/AHA CATEGORIES

Category	SBP (mmHg)	Link	DBP (mmHg)
Normal	<120	AND	<80
Elevated	120–129	AND	<80
Stage 1 Hypertension	130–139	OR	80–89
Stage 2 Hypertension	≥140	OR	≥90

HOW TO READ THE TABLE

- If SBP and DBP fall in different categories, use the higher category.
- ACC/AHA uses a lower diagnostic threshold than WHO. These categories are not the JNC 8 classification.
- Confirm persistent elevation using properly measured readings. One isolated high reading does not usually establish chronic hypertension.

HYPERTENSION

ETIOPATHOGENESIS

Primary (Essential) Hypertension

About 90–95% of cases. No single cause. Several factors act together.

Secondary Hypertension

About 5–10% of cases. Identifiable causes:

- Renal disease, e.g., renal artery stenosis.
- Endocrine disease: Cushing's syndrome, pheochromocytoma.
- Coarctation of aorta.
- Drugs: NSAIDs, oral contraceptives, steroids.

MECHANISMS

Increased sympathetic activity + overactive renin-angiotensin-aldosterone system (RAAS)

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Sodium retention, endothelial dysfunction and vascular remodeling

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Increased peripheral resistance and blood pressure

CLINICAL MANIFESTATIONS

- Often asymptomatic: the "silent killer".
- Possible headache, dizziness, palpitations, blurred vision, chest pain, fatigue or epistaxis (nosebleed).
- These symptoms are not specific. Measure blood pressure.

COMPLICATIONS

Heart: Left ventricular hypertrophy, heart failure.

Brain: Stroke, hypertensive encephalopathy.

Kidneys: Chronic kidney disease.

Eyes: Hypertensive retinopathy.

HYPERTENSION

NONPHARMACOLOGICAL MANAGEMENT

- DASH diet: fruits, vegetables and low-fat dairy.
- Reduce sodium intake. The source target is <2.4 g sodium/day, not <2.4 g salt/day.
- Weight control: aim for a healthy BMI, commonly <25 kg/m², individualized.
- Regular aerobic exercise: about 30–40 minutes/day as tolerated.
- Stop smoking and limit alcohol.
- Reduce stress with relaxation, yoga or meditation.

PHARMACOLOGICAL MANAGEMENT

Usual first-line classes

- Thiazide/thiazide-like diuretics: hydrochlorothiazide.
- ACE inhibitors: enalapril, ramipril.
- ARBs: losartan, valsartan.
- Long-acting dihydropyridine CCBs: amlodipine.

Selected or additional treatment

- Beta-blockers: atenolol, metoprolol, when indicated.
- Loop diuretics: selected patients with fluid overload or renal disease.
- Verapamil: a non-dihydropyridine CCB.
- Alpha-blockers, clonidine and vasodilators.

Drug choice depends on other diseases, contraindications and response. Monitor BP and adherence.

ANGINA

DEFINITION

Angina pectoris is chest discomfort due to transient myocardial ischemia, without myocardial cell death. Myocardial oxygen supply is insufficient for demand.

TYPES OF ANGINA

Stable angina	Unstable angina	Variant (Prinzmetal's) angina
Predictable with exertion or emotional stress. Usually relieved by rest or a short-acting nitrate.	New, worsening or rest pain. An acute coronary syndrome that may progress to MI. Urgent assessment.	Coronary artery spasm causes episodes, often at rest.

ETIOPATHOGENESIS

- Atherosclerotic plaques narrow coronary arteries.
- Coronary vasospasm reduces blood flow.
- Exertion or stress increases oxygen demand.

CLINICAL MANIFESTATIONS

- Retrosternal pressure or squeezing,
- May radiate to the left arm or jaw.
- Dyspnea, nausea and diaphoresis (sweating).
- Stable episodes usually last a few minutes, often <20 minutes.

New, severe, persistent or rest pain needs emergency evaluation. Do not wait for a 20-minute cutoff.

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