



PHARMACOLEARN

It's Important to Know!

BP204T — Pathophysiology

B.Pharm Semester 2 · Unit 2 — Cardiovascular, Respiratory and Renal Diseases

Unit II: Cardiovascular, Respiratory and Renal Diseases

Hypertension and heart failure

Hypertension is persistently elevated arterial pressure. Vascular resistance, blood volume, renal sodium handling, sympathetic activity and hormonal regulation all contribute. Chronic pressure overload can damage vessels and organs.

Congestive heart failure occurs when the heart cannot provide adequate output for tissue needs without abnormal filling pressures. Reduced output activates sympathetic and renin-angiotensin systems, which initially support pressure but can increase fluid retention and remodelling.

Ischaemic heart disease

Atherosclerosis involves lipid accumulation, inflammation and fibrous change in an arterial wall. Plaque rupture can activate platelets and clotting, producing an acute obstruction. Angina is myocardial ischaemic discomfort without established infarction, while myocardial infarction involves myocardial cell death caused by prolonged ischaemia.

Asthma and chronic obstructive airway disease

Asthma involves variable airway narrowing, inflammation and bronchial hyperresponsiveness. Chronic obstructive airway disease causes persistent airflow limitation associated with airway and parenchymal changes. Mechanisms, reversibility and clinical patterns differ.

Acute and chronic renal failure

Acute kidney injury is an abrupt reduction in kidney function. Chronic kidney disease is persistent structural or functional abnormality. Reduced filtration causes accumulation of waste, fluid and electrolyte disturbance, acid-base imbalance and endocrine effects such as reduced erythropoietin activity.

Unit II: Frequently asked questions

Q: How can hypertension damage organs?

A: Chronic high pressure promotes vascular injury and remodelling, increasing risk to the heart, brain, kidneys and retina.

Q: What is myocardial infarction?

A: It is death of myocardial cells caused by prolonged inadequate blood supply.

Q: What is a major consequence of reduced kidney filtration?

A: Nitrogenous waste accumulates and fluid, electrolyte, acid-base and endocrine regulation can be disturbed.

Unit II: Key takeaways

- Hypertension reflects interacting vascular, renal, neural and hormonal factors.
- Heart failure activates compensatory systems that can later worsen remodelling.
- Atherosclerotic plaque can obstruct blood flow or rupture.
- Asthma and chronic obstructive airway disease have different patterns of airway limitation.
- Kidney failure affects filtration, fluid, electrolytes, acid-base balance and erythropoiesis.

Unit II: Clinical correlation

Clinical correlation: atherosclerosis. Atherosclerotic plaque can narrow an artery gradually or rupture suddenly and trigger thrombosis.