PHARMACOLOGY II UNIT -1

1.Pharmacology of drugs acting on cardio vascular system

Case Study Puzzle Question

Case Study Puzzle 1: The Silent Blocker

A 55-year-old man with hypertension presents to the clinic complaining of fatigue, erectile dysfunction, and a persistent dry cough that started two weeks after beginning a new medication. His blood pressure is well-controlled at 130/80 mmHg, but he reports feeling "slowed down" during exercise. Lab tests show normal potassium levels but slightly elevated creatinine. The patient's history includes asthma, though it's currently stable.

Puzzle: Based on the symptoms and history, identify the likely antihypertensive drug class responsible for these side effects and explain the mechanism behind the cough. What alternative drug class might be more suitable for this patient?

Case Study Puzzle 2: The Racing Heart

A 42-year-old woman is admitted to the ER with palpitations, chest pain, and shortness of breath. Her ECG shows supraventricular tachycardia with a heart rate of 180 bpm. She has no history of heart disease but mentions recent stress and increased coffee intake. Intravenous administration of a drug rapidly converts her rhythm to sinus at 80 bpm, but she experiences a brief episode of flushing and headache during the infusion.

Puzzle: What antiarrhythmic drug was likely administered, and how does it work on the cardiovascular system? Why might this drug be preferred over a beta-blocker in this acute setting?

Case Study Puzzle 3: The Swollen Ankles

An 68-year-old diabetic patient with chronic heart failure reports bilateral ankle swelling and weight gain over the past month. He's been compliant with his regimen, including a loop diuretic, but his ejection fraction remains low at 35%. Adding a new medication improves his symptoms, but follow-up labs reveal hyperkalemia (potassium 5.8 mEq/L) and a rise in serum creatinine.

Puzzle: Identify the added drug (from the aldosterone antagonist class) and describe its pharmacological action on the cardiovascular and renal systems. What monitoring is essential to prevent complications like those seen here?

Case Study Puzzle 4: The Bleeding Mystery

A 70-year-old man on long-term therapy for atrial fibrillation presents with gum bleeding, easy bruising, and dark stools. His INR is elevated at 4.5 (target 2-3). He denies missing doses but admits to starting a new herbal supplement for joint pain. No recent dietary changes or alcohol use.

Puzzle: What anticoagulant is he likely on, and which herbal supplement could be interacting to cause this effect? Explain the mechanism of the interaction and suggest a management strategy.

Case Study Puzzle 5: The Pressure Drop

A 60-year-old woman with angina is prescribed a new vasodilator to reduce her chest pain episodes. After the first dose, she experiences severe headache, dizziness, and a drop in blood pressure to 90/60 mmHg while standing. Her symptoms resolve with rest, but she notes a "pounding" sensation in her head.

Puzzle: What class of drug (nitrate-related) was prescribed, and what is the primary mechanism by which it acts on the cardiovascular system? Why does tolerance develop with chronic use, and how can it be mitigated?