

DT 4th

Course Title: General Pharmacology II

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Q1.

(a) Differentiate between type I and type II diabetes mellitus

Ans.

Although Type 1 and Type 2 diabetes both have stuff in common, there are lots of differences. Like what causes them, who they affect, and how you should manage them. There are other types of diabetes like gestational and MODY. But we will mainly talk about the differences between Type 1 and Type 2.

Differentiate between type 1 and type 2

Type 1	Type 2
Your body attacks the cells in your pancreas which means it cannot make any insulin.	Your body is unable to make enough insulin or the insulin you do make doesn't work properly.
We don't currently know what causes Type 1 diabetes	We know some things can put you at risk of having Type 2 like weight and ethnicity.
The symptoms for Type 1 appear more quickly.	Type 2 symptoms can be easier to miss because they appear more slowly
Type 1 is managed by taking insulin to control your blood sugar.	You can manage Type 2 diabetes in more ways than Type 1. These include through medication, exercise and diet. People with Type 2 can also be prescribed insulin.
Currently there is no cure for Type 1 but research continues.	Currently there is no cure for Type 1 but research continues.

(b) As per your opinion which of the

Ans

INSULIN INHALERS

Similarly under development and refinement, insulin inhalers could have a big role to play in the future of diabetes management. Some insulin inhalers have already been brought to market, with others still works in progress. Insulin inhalers may use compressed air to deliver a dose of dry insulin or dissolved rapid-acting insulin that can then be inhaled.

The dose is inhaled through the mouth and goes directly into the lungs, where in theory it is absorbed and passes into the bloodstream.

Q2.

(a) Explain the role of vitamin K in blood clotting and treatment of bleeding disorders

Role of Vitamin K in coagulation

Vitamin K helps to regulate the process of blood coagulation by assisting in the conversion certain coagulation factors into their mature forms.

Without vitamin K, our bodies would be unable to control clot formation.

Imagine being unable to form blood clots effectively--that would mean that we would lose all of our blood volume from something as simple as a pinprick!

To prevent this extreme scenario - vitamin K must be ingested, metabolized, and utilized to create mature coagulation factors.

Bleeding dis-order:

A bleeding disorder is a condition that affects the way your blood normally clots. The clotting process, also known as coagulation, changes blood from a liquid to a solid. When you're injured, your blood normally begins to clot to prevent a massive loss of blood. Sometimes, certain conditions prevent blood from clotting properly, which can result in heavy or prolonged bleeding.

Your doctor may prescribe iron supplements to replenish the amount of iron in your body if you have significant blood loss. A low iron level can result in iron deficiency anemia. This condition can make you feel weak, tired, and dizzy. You may need a blood transfusion if symptoms don't improve with iron supplementation.

(b) What does thrombolytic agents mean? Explain with example

Ans

Thrombolysis, also called fibrinolytic therapy, is the breakdown of blood clots formed in blood vessels, using medication. It is used in ST elevation myocardial infarction, stroke, and in cases of severe venous thromboembolism. The most commonly used clot –busting drugs also known as thrombolytic agent include Eminase (antistreptase) Retavase(retaplases) Streptase (streptokinase, Kabikinase)

Q3.

(a) Explain the effects and adverse effects of organic nitrates in angina pectoris.

Ans

The most common adverse effect of organic nitrate is Headache.

High dose also cause postural hypertension.

Facial flushing and tachycardia.

Prolong therapy cause endothelial dysfunction

Cause Nausea/Vomiting and orthstatic weakness.

Essentially nitrates dilate widen or relax –the artery and the heart but also elsewhere in the body.

By dilating the blood vessels of the heart nitrates can reduce the stress on the heart by improving blood flow to the heart muscle.

It should be beneficial in patients which ischemia heart disease.

These drugs are effective in all the important ischemia syndrome.

(b) Write down the treatment algorithm for improving symptoms of stable angina.

Ans:

Current treatment strategies for chronic stable angina aim to control symptoms , reduce ischaemic burden and improve prognosis by preventing the progressing of atherosclerotic coronary artery disease and its consequences. Ideally the treatment of angina should be tailored to the individual patients needs taking into consideration the characteristic and severity of symptoms , the location severity and functional significance of coronary artery stenosis , the presence of co –morbidity and patient preference. For each individual patient , the efficacy of the agent of their side effect , together with patient compliance , are important determinants for success or the failure of a given treatment

Q4.

(a) Differentiate between primary and secondary hypertension

Primary Hypertension:

Essential hypertension is high blood pressure that doesn't have a known secondary cause. It's also referred to as primary hypertension. Blood pressure is the force of blood against your artery walls as your heart pumps blood through your body. Hypertension occurs when the force of blood is stronger than it should be normally. Most cases of high blood pressure are classified as essential hypertension. The other kind of hypertension is secondary hypertension. Secondary hypertension is high blood pressure that has an identifiable cause, such as kidney disease.

Secondary Hypertension:

Secondary hypertension differs from the usual type of high blood pressure (primary hypertension or essential hypertension), which is often referred to simply as high blood pressure. Primary hypertension has no clear cause and is thought to be linked to genetics, poor diet, lack of exercise and obesity.

(b) Explain the effect of renin on hypertension

Ans

RENIN

Renin also known as an angiotensinogenase, is an aspartic protease protein and enzyme secreted by the kidneys that participates in the body's renin-angiotensin-aldosterone axis that mediates the volume of extracellular fluid and arterial vasoconstriction.

RENIN EFFECT ON HYPERTENSION

Renin converts angiotensinogen, which is produced in liver, to the hormone angiotensin. An enzyme known as ACE or angiotensin-converting enzyme form in the lungs metabolizes angiotensin 1 into angiotensin 2. Angiotensin 2 causes blood vessels to constrict and blood pressure increase.

High or low levels may help explain why you have high blood pressure. High renin with normal aldosterone may show that you are sensitive to salt. Low renin and high aldosterone may mean your adrenal glands are not working the way they should. If both are high it can be a sign that there is a problem with your kidney.

(c) What is the importance of pharmacological treatment of hypertension?

Ans

Hypertension is one of the most important preventable causes of premature death worldwide, and the benefits of antihypertensive drugs have been confirmed by largest evidence base from clinical trials in medicine. Many classes of drugs are available for treatment and debate has raged about whether the benefits of treatment are purely of function of quality of blood pressure control or whether the type of drugs used might also be powerful determinant of outcome.

A meta-analysis of trials of treatment for hypertension with the newer drugs found that ACE inhibitors and calcium channel blocker were likely to reduce cardiovascular morbidity and mortality by the same order of magnitude as B blocker or thiazides but such analysis have insufficient statistical power to detect cause specific outcomes with regard to specific drugs.

Q5.

(a) Differentiate between right heart failure and left heart failure

Ans

The primary problem in advanced heart failure is that the heart is unable to push blood forward through circulatory system, thus causing pressure to build up in the veins returning blood to the heart. In effect, blood begins to back up in the venous system, increasing the pressure gradient for fluid to move out of the capillary beds. The net movement of fluid out of the capillaries causes the edema or congestion typically found in advanced stages of heart failure.

Left Heart Failure

In left heart failure, the left atrium and ventricle are unable to adequately handle the blood returning from the lungs. This causes pressure to build up in the pulmonary veins, and fluid accumulates in the lungs. Consequently, left heart failure is associated with pulmonary edema

Right Heart Failure

In right heart failure, the right atrium and ventricle are unable to handle blood returning from the systemic circulation. This causes fluid to accumulate in the peripheral tissues, and ankle edema and organ congestion (liver, spleen) are typical manifestations. If both left and right heart failure occur simultaneously, congestion is found in the lungs as well as the periphery.

(b) Summarize the pharmacotherapy of heart failure

Ans:

Basic goals in congestive heart failure is to improve the heart's pumping ability

Increase cardiac contractile performance and produce what is referred to as a positive inotropic effect. "Inotropic" refers to the force of muscular contraction; the primary drugs used to exert a positive inotropic effect are the cardiac glycosides

Decrease cardiac workload through an effect on the heart or peripheral vasculature, or by controlling fluid volume, are recognized as beneficial in congestive

heart failure. Angiotensin converting enzyme inhibitors, beta blockers, diuretics, and vasodilators

Strategies

A. Drugs That Increase Myocardial Contraction Force (Positive Inotropic Agents)

1 Cardiac Glycosides

Adverse effects

Gastrointestinal symptoms Anorexia, nausea, vomiting, abdominal pain

Visual disturbances halos, photophobia, problems with color perception, scotomata

CNS effects headache, confusion, delirium, psychosis, fatigue, weakness

Cardiac effects ventricular arrhythmias, ventricular tachycardia, ventricular fibrillation, sinus bradycardia

SPECIFIC AGENTS

Digoxin (Lanoxin) Digitoxin (Digitaline)