

DT 4th

Course Title: General Pharmacology II

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Note:

Attempt all questions

Each question carry equal marks

Pay attention to every point of question

Give to the point answers

Extra detail may leads to marks deduction

Q1.

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

(a) :

Diabetes mellitus type I :

A form of chronic hyperglycemia caused by immunologic destruction of pancreatic beta cells .

Diabetes mellitus type II :

A form of chronic hyperglycemia initially caused by resistance to insulin; often progresses to insulin deficiency .

- (b) As per your opinion which of the insulin delivery device is more effective and why?

(b) :

There are many different types of insulin delivery devices available including syringes, pens, jet injectors, oral insulin and pumps which are detailed below.

Furthermore, insulin that can be inhaled and other new approached to insulin treatment are at different stages of availability and development throughout the world.

According to a general survey and advice of professionalist Insulin pens are the most effective insulin delivery devices....

Insulin Pen:::

An insulin pen resembles a large pen. It replaces the vial and syringe, assists people with poor eyesight, and helps avoid over- or under-dosing.

Different companies manufacture these devices. Pens use insulin cartridges and disposable needles. You can select (dial) the proper dose, which is displayed in the pen's window. Some models allow you to reselect the dose if a mistake is made. Needles simply screw into place and are easily removed to be properly discarded.

Some pens:

1 Do not require refrigeration after the first use

- 2 Have a memory to recall past doses
- 3 Are prefilled, disposable
- 4 More durable than others.

Q2.

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

(a) :

Role of vitamin K on blood clotting:

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 .

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

(b) :

A drug that is able to dissolve a clot (thrombus) and reopen an artery or vein are known as thromolytic agents .

Examples are :

i) Aspirin and other NSAIDs inhibit thromboxane synthesis by blocking the enzyme cyclooxygenase .Thromboxane A is a potent stimulator of platelet aggregation .

ii) Abciximb is a mono clonal antibody that reversibly inhibits the binding of fibrin and other ligands to the platelet glycoprotein IIb/IIIa receptor, a cell surface protein involved in platelet crosslinking .

Eptifibatide and tirofiban also reversibly block the glycoprotein IIb/IIIa receptor .

iii) Clopidogrel , prasugrel , and older drug ticlopidine are converted in the liver to active metabolites that irreversibly inhibits the platelet ADP receptor and there by prevent ADP-mediated platelet aggregation .

iv) Dipyridamole and the newer cilostazol appear to have a dual mechanism of action .

The prolong the platelet-inhibiting action of intracellular cAMP by inhibiting phosphodiesterase enzymes that degrade cyclic nucleotides , including cAMP , an inhibitor of platelet aggregation, and cyclic guanosine monophosphate (cGMP), a vasodilator .

They also inhibit the uptake of adenosine by endothelial cells and erythrocytes and there by increase the plasma concentration of adenosine . Adenosine acts through platelet adenosine A receptors to increase platelet cAMP and inhibit aggregation .

Q3.

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

(a) :

Effects :

Potential beneficial effects :

* Decreased ventricular volume

- * Decrease arterial pressure
- * decrease ejection time
- * Vasodilation of epicardial coronary arteries
- * Increased collateral flow
- * Decreased left ventricular diastolic pressure

Potential deleterious effects :

- * Reflex tachycardia
- * Reflex increase in contractility

Adverse effects :

Central nervous system:

- * Throbbing headache (>50% can be severe)
- * Dizziness , vertigo , lightheadedness (5%)
- * Syncope (4% with high doses).

Cardiovascular system:

- * Flushing of the face (common with rapid-acting preparations , likely due to the local production of prostaglandins).
- * Palpitations (with high doses)
- * Postural hypertension (frequent)
- * Profound hypertension (if taken concomitantly with sildenafil , a specific cGMP phosphodiesterases-5 inhibitor. The interaction can be life-threatening).

Other systems:

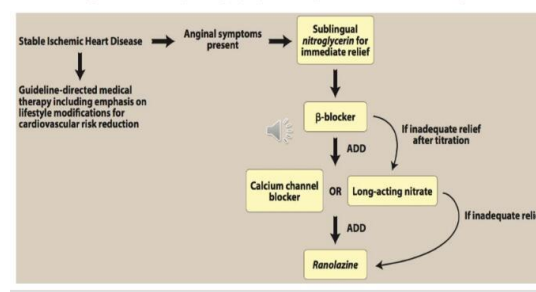
- * Skin rashes , contact dermatitis (rare)
- * Methemoglobinemia (with nitrate, or with toxic doses of nitrates) (very rare)
- * Withdrawal reactions (digital vasospasm, coronary spasms , myocardial ischemia ,myocardial infection)
- * Drug abuse (with amyl nitrate)

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

(b) :

Symptoms of chronic stable angina can usually be managed with optimum doses of one of the available antianginal drugs (beta blockers , long-acting nitrates , or calcium channel blockers) , alone or in combination .

Treatment algorithm for improving symptoms in patients with stable angina.



Q4.

(a) Differentiate between primary and secondary hypertension

(a):

Secondary hypertension:

Secondary hypertension differs from the usual type of high blood pressure (primary or essential hypertension), which is often referred to simply as high blood pressure.

Primary hypertension:

It 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

(b):

The renin-angiotensin system (RAS), or renin-angiotensin-aldosterone system (RAAS), is a hormone system that regulates blood pressure and fluid and electrolyte balance, as well as systemic vascular resistance. This increases the volume of extracellular fluid in the body, which also increases blood pressure.

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

(c)

Hypertension, or high blood pressure, is dangerous because it can lead to strokes, heart attacks, heart failure, or kidney disease. The goal of hypertension treatment is to lower high blood pressure and protect important organs, like the brain, heart, and kidneys from damage. That's why pharmacological treatment of hypertension is important to avoid these life-threatening risks.

Q5.

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

(a):

Left heart failure occurs when the left ventricle doesn't pump efficiently. This prevents your body from getting enough oxygen-rich blood. The blood backs up into your lungs instead, which causes shortness of breath and a buildup of fluid. 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:

Right-sided heart failure means that the right side of the heart is not pumping blood to the lungs. In this, the 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 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

(b):

Pharmacotherapy:

Strategies:

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.

Decreases cardiac workload through can effect on the heart or peripheral vasculature , or by controlling fluid volume , are recognized as beneficial in congestion heart failure angiotension converting enzyme inhibitor beta blockers , diuretics and viaodilators .