IQRA NATIONAL UNIVERSITY

(ALLIED HEALTH SCIENCES)

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PAPER

QUESTION No 1

A

❖ TYPES DIABETES MELLITUS

Diabetes mellitus is a disorder in which blood sugar (glucose) levels are abnormally high because the body does not produce enough insulin to meet its needs. Urination and thirst are increased, and people may lose weight even if they are not trying to. Diabetes damages the nerves and causes problems with sensation.

DIABETES MELLITUS IS CLASSIFIED INTO 4 CATEGORIES

- **Types 1**
- **Type 2**
- **Other**
- **Gestational diabetes mellitus (During pregnancy hormonal imbalance)**

❖ **TYPE 1: It's a type of diabetes mellitus/ form of chronic hyperglycemia caused by immunologic destruction of pancreatic beta cells (Immune cells against the beta cell/destroy and a result not producing insulin)**

❖ **TYPE 2: It's also a type of diabetes mellitus/ form of chronic hyperglycemia caused by resistance to insulin; often progresses to insulin deficiency (with passage of time our body showing resistance against the insulin secretion and a result insulin deficiency occur)**

B

❖ EFFECTIVE INSULIN DELIVERY DEVICE:

According to my opinion the "Continuous insulin infusion device" is more effective because it have more ability than others.

- **ADVANTAGES:**
  - **Avoiding multiple daily injection**
  - **In the scheduling of patient daily activities they provide flexibility**
  - **Programmable pumps deliver a constant 24h basal rate**
  - **Have manual adjustment in rate of delivery**
  - **Made to accommodate changes in insulin requirements (e.g. before meals or exercise)**

QUESTION No 2

A

❖ ROLE OF VITAMIN K

Vitamin K have important role in the synthesis of clotting factors. There some clotting factors which are fully dependent on vitamin K like Clotting factors (II, VII, IX, and X). When the Vitamin K not involve in clotting factor synthesis than those clotting factor will not be in active form (vitamin K catalyzes the reaction necessary for completion of clotting factor synthesis).

During this process the vitamin K convert into Vitamin K epoxide > vitamin K epoxide reductase > vitamin k

B

❖ THROMBOLYTIC AGENTS

Thrombolytic agents means those agents which doing the breakdown of blood clotting/ Thrombolytic agents is a treatment to dissolve dangerous clots in blood vessels, improve blood flow, and prevent damage to tissues and organs.

❖ Mechanism:

In mechanism of thrombolytic agents Plasmin is an endogenous fibrinolytic enzyme that degrades clots by splitting fibrin into fragments, plasminogen > plasmin

❖ Example:

TISSUE PLASMINOGEN ACTIVATOR (t-PA): It is an enzyme that directly convert plasminogen to plasmin e.g. drugs, as a result breakdown of blood clotting

QUESTION No 3

A

❖ ORGANIC NITRATES:

❖ EFFECTS:

- **Most effective type of angina pectoris**

A. **Dilation of the large veins resulting in pooling of blood** (in the veins which diminish the preload and reduces the work of the heart)

B. **Dilates the coronary vasculature** (providing increased blood supply to the heart muscle)

- **Decrease Preload**
- **Decrease Afterload**
- **Relieving vasospasm**
- **Redistribution blood flow**

- **The total effect is a decrease in myocardial oxygen consumption because of decreased cardiac work**

❖ ADVERSE EFFECTS:

- **Headache 30-60%** (due to nitrates because of the pronounced vasodilation)
- **Postural hypotension** (due to high doses)
- **Flushing** (due to high doses)
- **Tachycardia** (due to high doses)

B

❖ STABLE ANGINA

TREATMENT:

- **Can be rapidly relived by rest/ nitroglycerin (vasodilator) > Visodilate > Blood flow increase > O_2 increase > supply normal**

QUESTION No 4

A

❖ TYPES OF HYPERTENSION:

PRIMARY HYPERTENSION:

- **A.k.a Essential hypertension**
- **A Disorder of unknown origin affecting the blood pressure regulating mechanism**
- **BLOOD PRESSURE ARISE - UNKNOWN THEIR ORIGIN or ON SET**

SECONDARY HYPERTENSION:

- **High blood pressure that's caused by another medical condition or disease**
- **e.g. obese patient** (fats > PR increase > accumulation of fats in blood vessel > thin > BP increase

B

❖ EFFECT OF RENIN ON HYPERTENSION :

- **Renin have important function in the physiology of hypertension**
- **Renin is a Gland which is present on kidney**

- It's release from medullary cells of kidney
- Main role of Renin is to convert Angiotensin I into Angiotensin II >>>>for BP arising

MECHANISM:

RENIN > ANGIOTENSIN I > ANGIOTENSIN II > ALDOSTERONE > Na+ RETENTION > VOLUME INCREASE > ARTERIOLAR WALL > BLOOD PRESSURE INCREASE

A. Main role of Renin is to convert Angiotensin I into Angiotensin II
B. Angiotensin II help in the releasing of Aldosterone hormone
C. Aldosterone then doing the increase-ment of Na+ retention in kidney during purification
D. Aldosterone helping with Na+ molecule to reabsorb the water molecule (Na+ molecule = water molecule reabsorb)
E. Blood volume rise
F. Arteriolar wall pressure increase
G. Blood pressure increase (hypertension)

C

❖ PHARMACOLOGICAL TREATMENT OF HYPERTENSION :

Pharmacological treatment of hypertension (blood pressure) is very important because if we do not treat it in time, it can lead to untreated disease. LIKE:

- **Blood vessel damage (arteriosclerosis)**
- **Heart attack or Heart failure**
- **Kidney failure**
- **Stroke**
- **Etc**

QUESTION No 5

A

LEFT HEART FAILURE:

The left ventricle of the heart no longer pumps/The left atrium and ventricle are unable to adequately handle the blood returning from the hearts. As a result, blood builds up in the pulmonary veins (the blood vessels that carry blood away from the lungs) and fluid accumulates in the lungs is known as pulmonary edema.

- **left sided heart failure is usually caused by Coronary artery disease (CAD)**
- **Most common type**
- **cause shortness of breath, trouble breathing or coughing during physical activity**

RIGHT HEART FAILURE:

HERE the left ventricle of the heart is too weak to pump enough blood to the lungs. This causes blood to build up in the veins (the blood vessels that carry blood from the organs and tissue back to the heart). The increased pressure inside the veins can push fluid out of the veins into surrounding tissue. This leads to a build-up of fluid in the legs, spleen, and liver or less commonly in the genital area, organs or the abdomen (belly).

- **Sometimes caused by high blood pressure in the lungs, an embolism in the lungs (pulmonary embolism), or certain lung diseases such as COPD.**

B

PHARMACOTHERAPY:

The treatment of disease or disorder with medication

HEART FAILURE:

It is a serious condition, and usually there's no cure. The heart failure is a term used to describe a heart that cannot keep up with its workload. The body may not get the oxygen it needs.

❖ PHARMACOTHERAPY OF HEART FAILURE:

There are two strategies which have basic goals in congestive heart failure is to improve the heart's pumping ability.

A. Increase cardiac contractile performance

- A.k.a positive inotropic effect
- Inotropic means “force of muscular contraction”
- E.g. cardiac glycosides

Drugs that increase myocardial contraction force

- **CARDIAC GLYCOSIDES**
  - Digoxin (Lanoxin)
  - Digitoxin (Digitaline)
- **PHOSPHODIESTERASE INHIBITOR**
  - Inamrinone
  - Milrinone
- **DOPAMINE & DOBUTAMINE**

B. Decrease cardiac work load

- Controlling fluid volume
- Reduce heart work load
- Control peripheral vasculature

Drugs that Decrease cardiac work load

1. **Drugs Affecting the Renin- Angiotensin system**

- **ACE INHIBITORS**
  - Captropril (Capoten)

- **Enalapril (Vasotec)**

- **<u>ANGIOTENSIN RECEPTOR BLOCKERS</u>**
  - **Candesartan**
  - **Losartan**
  - **Valsartan**
- **<u>BETA BLOCKERS</u>**
  - **Acebutolol (Sectral)**
  - **Atenolol (Tenormin)**
  - **Carteolol (Cartrol)**
  - **Carvedilol (Coreg)**
  - **Labetolol (Normodyne, Trandate)**
  - **Metoprolol**
- **<u>DIURETICS</u>**
  - **Furosemide**
  - **Thiazide diuretics**
  - **Spironolactone**
  - **Epierenone**
- **<u>VASODILATORS</u>**
  - **Prazosin**
  - **Hydralazine**
  - **Organic nitrates**

THANK YOU SO MUCH