

UNIVERSITY SOLVED QUESTION WITH ANSWER

Year : 2021-22

Subject : Pathophysiology

Subject Code : 23PBP204

Subject In-Charge : Mr. Pankaj Kumar Rout and Ms. Monali Padhi



Registration No :

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Total Number of Pages : 02

B.Pharm
BP204T

2nd Semester Regular / Back Examination: 2021-22
PATHOPHYSIOLOGY

BRANCH(S): B.Pharma

Time : 3 Hour

Max Marks : 75

Q.Code : J669

Answer Question No.1 (Part-1) which is compulsory, any seven from Part-II and any two from Part-III.

The figures in the right hand margin indicate marks.

- Q1** **Part-I**
Answer the following questions : (2 × 10)
- Write various signs of inflammation.
 - Differentiate between hypertrophy and hyperplasia with examples.
 - Write the relation between hyperuricemia and gout?
 - Name the causative agent of Syphilis. Write down its symptoms
 - What is the difference between stable angina and unstable angina
 - Write down the difference between hyperplasia and neoplasia.
 - What is bipolar disorder?
 - Define and classify seizure.
 - Name the examples of plasma derived mediators of inflammation.
 - Define the term chemotaxis.
- Q2** **Part-II**
Focused-Short Answer Type Questions- (Answer Any Seven) (5 × 7)
- Differentiate between Apoptosis and Necrosis.
 - What is CHF? Write the etiopathogenesis of this disease.
 - Discuss the pathogenesis and symptoms of peptic ulcer.
 - Define pulmonary and non-pulmonary tuberculosis. Briefly discuss its pathogenesis.
 - Describe the etiology, clinical features and pathogenesis of bronchial asthma.
 - Define and classify tumor. Briefly describe about the etiopathogenesis of cancer.
 - What is anemia? Write down the causes and symptoms of megaloblastic anemia.
 - Write the difference between atherosclerosis and arteriosclerosis. Discuss about the etiopathogenesis of atherosclerosis.
 - What is hyperbilirubinemia? Write down the pathogenesis and symptoms of jaundice.
- Q3** **Part-III**
Long Answer Type Questions (Answer Any Two) (10)
- Explain various etiology of cell injury and describe pathogenesis of reversible cell injury due to hypoxia and Ischemia.
- Q4** (10)
- Discuss about the Cellular events of inflammation and chemical mediators of inflammation. Write a short outline on process of repair.

5 Define Rheumatoid arthritis. Discuss the etiology, pathogenesis, sign and symptoms of Rheumatoid arthritis. (10)

6 Define and classify Diabetes mellitus. Describe the pathogenesis, symptoms and complications of diabetes mellitus. (10)



Q Define Rheumatoid arthritis. Discuss the etiology, Pathogenesis, sign and symptoms of Rheumatoid arthritis. (10)

Ans- It is a chronic systemic inflammatory disorder that primarily affect synovial membrane followed by extra articular tissue.

- The membrane present in the synovial joint that lines the joint capsules & create synovial fluid.

- It occurs at the age of 30-50.

- If the disease not treated early then it will leads to progressive joint deformity.

Etiology

- Genetic factors

- Smoking

- Hormonal imbalance

- Vitamin-D deficiency

- Hepatitis B & C.

Pathogenesis

Various etiological factors / inflammation



Activation of T-cells & B-cells



Production of auto antibodies & cytokines



Inflammatory pathway initiated



Proliferation of synovial fluid in joint.



Pannus formation



Cartilage formation destruction & bony erosion



Rheumatoid Arthritis

Signs & Symptoms

- Joint pain in feet, hand, knee
- Joint stiffness
- Joint swelling
- Loss of Appetite
- Fever
- Fatigue
- Weakness
- Muscle ache

Diagnosis

- Joint fluid analysis
- X-ray
- MRI
- Ultrasound scan

Complications

- Osteoporosis
- Myocardial infarction
- Lung disease
- Premature death

Treatment

- > Non-steroid anti-inflammatory drug (Ibuprofen, Naproxen sodium)
- > Surgery
- > Corticosteroid medication (Prednisone)
- > Physical exercise
- > Balanced Diet.

Q) Define and classify Diabetes mellitus. Describe the pathogenesis, symptoms and complications of diabetes mellitus.

Ans → It is a metabolic disease in which blood sugar level is high for a prolonged period of time.
→ It is a serious disease in which a person's body can't control the level of sugar in the blood.

Types:-

It is mainly of two types.

(i) Type - I diabetes mellitus

(ii) Type - II diabetes mellitus

Type - I DM

→ It is also known as insulin dependant diabetes.

→ It is the chronic condition in which

→ It constitutes about 10% cases of diabetes mellitus.

→ It occurs because of destruction of β cells of pancreas due to autoimmune disorders.

→ It leads to deficiency of insulin that leads to increase in blood glucose level.

→ Type - II DM

→ It is also known as non insulin dependant diabetes.

→ It constitutes about 90% cases of diabetes.

→ It generally occurs when cell doesn't respond to properly.

→ In type-II diabetes receptors on cells becomes Insulin Resistance.

→ It generally occurs due to physical inactivity, obesity & poor dietary habits.

Etiology

- Genetic factors (genetic defects in β -cells, mutation, etc.)
- obesity
- Age
- Stress
- Alcohol, smoking (unhealthy lifestyle)
- Physical inactivity
- PCOS
- Deficiency of insulin synthesis / secretion.

Pathogenesis

For type I diabetes

Due to genetic mutations



Autoimmune Disorder



Activation of cytotoxic T-cells



Destruction of β -cells



Deficiency of insulin



Blood glucose level ↑



Type I DM

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For Diabetes - II

Due to various etiological factors



Receptors become insulin resistant



Insulin failed to bind with receptors



Hypertrophy of β cells



Hyperinsulinemia



Dysfunction / Failure of β cells



Blood Glucose Level \uparrow



Prediabetes



DM Type II

Symptoms

- Excessive thirst
- Frequent urination
- Increased hunger
- Weight loss
- Fatigue
- Slow Healing

Complications

- Diabetic Neuropathy
- Diabetic Nephropathy
- Diabetic Retinopathy
- Cardiovascular Diseases
- Depression / Anxiety

Treatment

- Healthy Diet
- Regular Exercise
- Weight Management
- Blood sugar monitoring
- Certain medications
 - Sulfonyl urea etc.

3) a) write various signs of inflammation.

- Redness
- Pain
- Swelling
- Loss of function
- Heat

b) Differentiate between hypertrophy & hyperplasia with examples?

Hypertrophy

-> It is defined as increase in size of the cell.

-> Occurs in cells that can't divide.

-> It can be reversible if the stimulus is removed.

Ex:- skeletal muscle growth due to exercise

Hyperplasia

-> It is defined as increase in number of cells.

-> occurs in cells capable of division

-> It can also be reversible if the stimulus is removed.

Ex:- Glandular proliferation

in the breast during pregnancy

c) write the relation between hyperuricemia and gout?

Ans- Hyperuricemia refers to elevated levels of uric acid in the blood, which can lead to the formation of monosodium urate crystals. These crystals deposit in joints and tissues, triggering inflammation & causing gout, a form of arthritis characterized by severe pain & swelling.

d) Name the causative agent of syphilis. Write down its symptoms?

Ans- Causes

- Sexual intercourse
- Blood transfusion
- Mucus contact

-> Syphilis caused by *Treponema pallidum*

Symptoms

- Painless ulcer appears
- Sore throat
- Fever, fatigue, Headache
- Hair loss
- Neurological problems.

e) Difference between stable angina & unstable angina.

Stable angina

-> Caused by fixed atherosclerotic plaque reducing blood flow during stress.

-> Occurs during physical activity or stress.

-> Pain lasts a few minutes

-> Managed with lifestyle changes, medications.

Unstable angina

-> Caused by rupture of plaque & partial thrombus formation, leading to reduced blood flow.

-> Can occur at rest or minimal exertion

-> Pain is prolonged, more severe.

-> Requires urgent medical attention.

f) Write down the difference betⁿ hyperplasia & neoplasia.

Hyperplasia

-> Increase in the no. of normal cells.

-> Cells remain normal in structure & function.

Ex:- Glandular proliferation during lactation

Neoplasia

-> Abnormal & uncontrolled proliferation of cells.

-> Cells may be abnormal in structure & function.

Ex:- Benign tumours, Malignant tumours.

h) Define & classify seizure?

Ans- → A seizure is a sudden, uncontrolled electrical disturbance in the brain, causing changes in behaviour, movement, sensation or consciousness.

→ It is mainly two types.

(i) Focal / Partial seizures

(ii) Generalized seizures

i) Name the examples of plasma derived mediators of inflammation?

- The kinin system

- The clotting system

- The fibrinolytic system

- Complement system.

j) Define the term chemotaxis.

→ Chemotaxis is the movement of cells or organisms toward or away from a chemical stimulus.

→ In the immune system, it refers to the directed migration of cells like neutrophils toward chemical signals at sites of infection or injury.

2) a) Differentiate between Apoptosis & Necrosis?

Apoptosis

Necrosis

- Programmed, regulated cell death that occurs as a normal physiological process.

- Triggered by intrinsic signals.

- Highly regulated, involves cell shrinkage, chromatin condensation and formation of

- Uncontrolled accidental cell death caused by external injury or damage.

- Caused by external factors such as trauma, ischemia, infection, etc.

- Unregulated, involves cell swelling, membrane rupture.

- apoptotic bodies.
- No inflammation.
 - Requires energy for execution of the process.
 - Reversible once initiated.
 - **Em!** - Removal of webbing in embryonic development, Elimination of cancerous or infected cells.

- and release of cellular contents.
- Triggers inflammation on due to the release of intracellular contents.
 - **Em!** - Does not require energy
 - Irreversible after critical cell injury.
 - Em!** - Tissue damage in myocardial infarction, cell death due to severe burns or inflammation.

b) what is CHF? write the etiopathogenesis of the disease.

Ans -> Congestive heart failure is defined as failure of heart capacity to pump sufficient blood that required for proper functioning of the body.

-> The term CHF is used for chronic form of heart failure.

Types

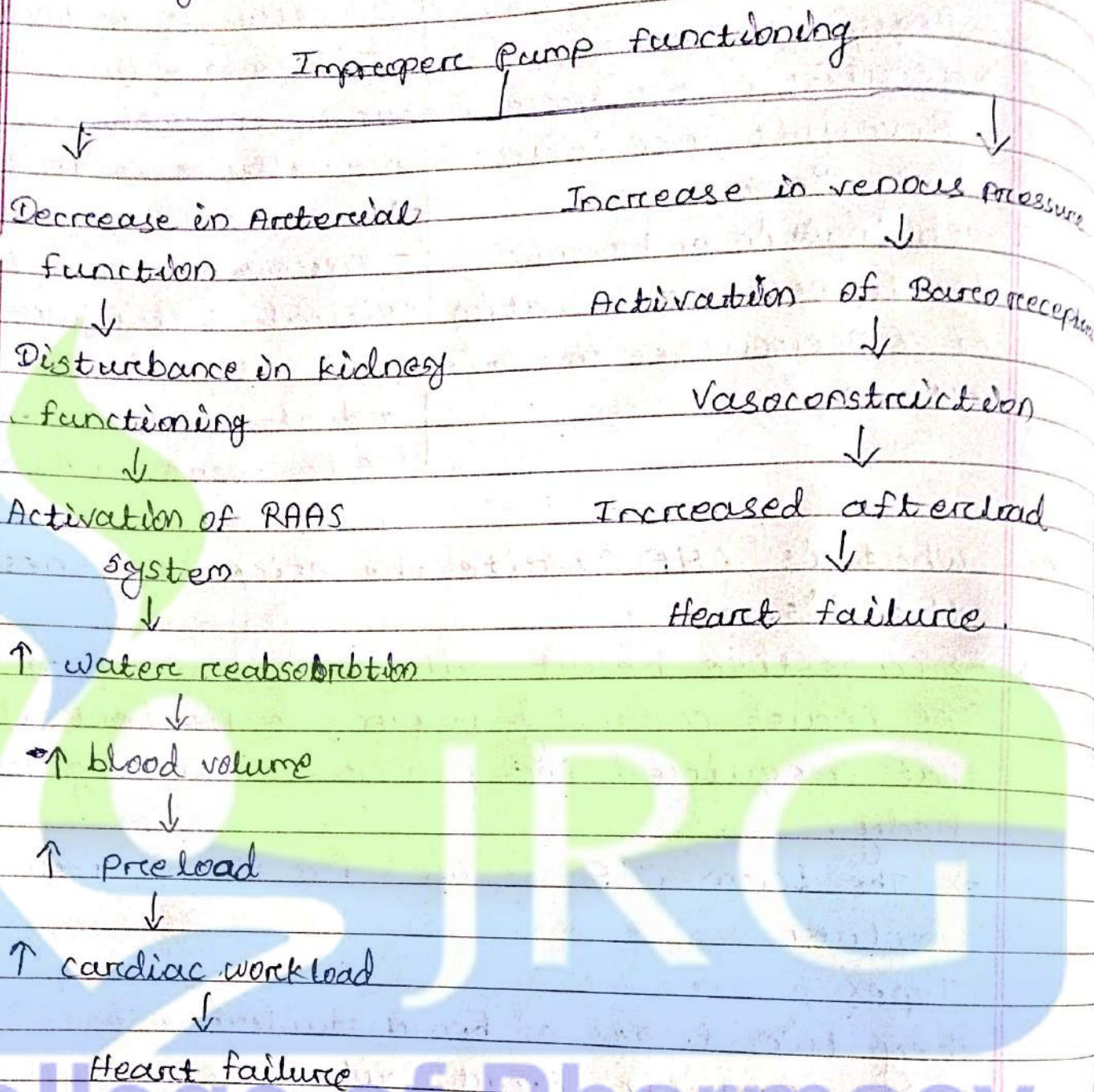
They two types of heart failure.

- Systolic heart failure.
- Diastolic heart failure.

Etiology

- Hypertension
- High sodium in diet
- Diabetes
- Overweight
- Smoking
- Alcohol

Pathogenesis



c) Discuss the pathogenesis & symptoms of peptic ulcer?

Ans → A peptic ulcer can be defined as a sore or hole that forms in the lining of the stomach or the first part of small intestine (duodenum).
→ It mainly occurs when stomach acid damages the lining of these organs.

Pathogenesis

Due to various etiological factors,



Imbalance between protective factors & Damaging factors



Decrease Mucus production / Increase HCl secretion



Destruction of mucous lining



Peptic ulcer.

Symptoms

- Abdominal pain
- Heartburn
- Nausea & vomiting
- Bloating
- weight loss
- Dark blood in stools
- Indigestion.

Q) What is anemia? write down the causes & symptoms of megaloblastic anemia.

Ans -> It is defined as, it is the reduction of hemoglobin and RBCs concentration in blood below the normal range.

-> Due to deficiency of Hb / RBC, there will be decreasement in the amount of O_2 in body, which can be cause serious damage / diseases.

Megaloblastic anemia

→ It is a condition in which bone marrow forms large, structurally abnormal & immature RBC's known as megaloblastic & this condition is known as megaloblastic anaemia.

Symptoms

- Fatigue

Causes

→ It is caused due to deficiency of cobalamine & folic acid

Symptoms

- Fatigue

- Pale skin

- Breathlessness

- Dizziness

- Irregular heartbeat.

e) Describe the etiology, clinical features & pathogenesis of bronchial asthma.

→ Asthma is a chronic, inflammatory & reversible airway disease in which a person's airway becomes inflamed, narrow, swell & produce extra mucus which makes it difficult to breathe.

Etiology

- Smoking

- Cold / dry air

- Air pollution

- Food chemicals

- Family history

- Obesity

- Lung infections.

Pathogenesis

Activation of T-Helper cells



release of cytokines

Activation of plasma β -cells

Generation of IgE antibodies



Binding of IgE on mast cells



Entry of foreign particles



Antigen / Antibody complex



Bursting of mast cells



Release of inflammatory mediators



Bronchoconstriction / Mucus hypersecretion



Asthma attacks

f) Define & classify tumour. Briefly describe about the etiopathogenesis of cancer.

ANS- → A tumour is an abnormal mass of tissue resulting from excessive, uncontrolled cell division.

Types

- (1) Benign tumour
- (2) Malignant tumour

Etiology of cancer

- Radiations
- Smoking
- Alcohol
- Air pollution
- Diet & nutrition
- Industrial carcinogens

Pathogenesis

DNA damaging agents: chemicals, Radiations, viruses

Normal cell

DNA Damage

Mutations in gene of somatic cells

Activation of growth promoting oncogenes

Alteration of genes regulating apoptosis

Inactivation of suppressor genes

Expression of altered gene products & less of regulatory gene products

cancer

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