GARDEN CITY UNIVERSITY

SEMESTER- III

Bachelor of Physiotherapy

Title of the course: Pathology

COURSE CODE : 06ABPTR17311 **CREDITS: 04**

UNIT 1. Introduction to Pathology, Cell injuries

1.1 Etiology and pathogenesis with a brief recall of important aspects of normal cell structure. Reversible cell injury: types, sequential changes, cellular swellings, vacuolation, hyaline changes, mucoid changes. Irreversible cell injury: types of necrosis & gangrene, autolysis. Pathologic calcification: dystrophic and metastatic. Intracellular accumulations - fatty changes, protein accumulations, glycogen accumulations.

1.2 Pigments - melanin / hemosiderin. extra cellular accumulations: amyloidosis - classification, pathogenesis, pathology including special stains.

1.3 Inflammation and repair: acute inflammation: features, causes, vascular and cellular events. inflammatory cells and mediators. Chronic inflammation: causes, types, classification nonspecific and granulomatous with examples. Repair, wound healing by primary and secondary union, factors promoting and delaying the process. healing in specific site including bone healing.

UNIT 2. Immunopathology

2.1 Immune system: general concepts. Hypersensitivity: type and examples, antibody and cell mediated tissue injury with examples. Secondary immunodeficiency including HIV infection. Auto-immune disorders: basic concepts and classification, SLE.

2.2 AIDS-etiology, modes of transmission, diagnostic procedures, handling of infected material and health education.

UNIT 3. Infectious diseases

3.1 Mycobacterial diseases: tuberculosis, leprosy. Bacterial disease: pyogenic infections, diphtheria, gram negative infection, bacillary dysentery rickettsia, chlamydial infection and syphilis. Viral diseases: poliomyelitis, herpes, rabies, measles, HIV infection. Fungal disease and opportunistic infections. Parasitic diseases: malaria, filariasis, amoebiasis, kala-azar, cysticercosis, hydatid cyst.

UNIT 4. Circulatory disturbances

4.1 Hyperemia/Ischemia and hemorrhage edema: pathogenesis and types. Chronic venous congestion: lung, liver, spleen, systemic pathology thrombosis and embolism: formation, fate and effects.

4.2 Infarction: types, common sites. Shock: pathogenesis, types, morphological changes.

UNIT 5. Growth disturbances

5.1 Atrophy, hypertrophy, hyperplasia, aplasia, hypoplasia, metaplasia, malformation, agenesis, dysplasia.

5.2 Precancerous lesions. Neoplasia: definition, classification, biological behavior: benign and malignant, carcinoma and sarcoma.

5.3 Malignant neoplasia: grades and stages, local & distant spread. Carcinogenesis: environmental carcinogens, chemical, viral, occupational. Heredity and cellular oncogenes and prevention of cancer. Benign and malignant epithelial tumours eg. Squamous papilloma, squamous cell carcinoma, malignant melanoma. benign and malignant mesenchymal tumors eg: fibroma, lipoma, neurofibroma, fibrosarcoma, liposarcoma, rhabdo-myosarcoma, teratoma.

UNIT 6. Genetic disorders

6.1 Basic concepts of genetic disorders and some common examples and congenital malformation.

UNIT 7. Hematology

7.1 Constituents of blood and bone marrow, regulation of hematopoiesis. anemia: classification, clinical features & lab diagnosis. Nutritional anemias: iron deficiency anemia, folic acid, vitamin. B 12 deficiency anemia including pernicious anemia. Hemolytic anemias: classification and investigations. Hereditary hemolytic anemia's: thalassemia, sickle cell anemia, spherocytosis and enzyme deficiencies. acquired hemolytic anemia's autoimmune, autoimmune drug induced, microangiopathic pancytopenia - aplastic anemia. Hemostatic disorders, vascular and platelet disorders & lab diagnosis. coagulopathies –inherited. Acquired with lab diagnosis. Leukocytic disorders: leukocytosis, leukopoenia, leukemoid reaction. Leukemia: classification, clinical manifestation, pathology and diagnosis. multiple myeloma and dysproteinemias.

7.2 Blood transfusion; grouping and cross matching, untoward reactions, transmissible infections including HIV and hepatitis, blood-components and plasma-pheresis.

UNIT 8. Respiratory system and Cardiovascular pathology

8.1 Pneumonia, bronchitis, bronchiectasis, asthma, tuberculosis, carcinoma of lungs, occupational lung diseases.

8.2 Congenital heart disease: atrial septal defect, ventricular septal defect, Fallot's tetralogy, patent ductus arteriosus. Endocarditis, rheumatic heart disease, vascular diseases: atherosclerosis, monckeberg's medial calcification, aneurysm and arthritis and tumors of blood vessels. Ischemic heart disease: myocardial infarction. hypertension and hypertensive heart disease.

UNIT 9. Alimentary tract & Hepato – biliary pathology

9.1 Oral pathology: ulcers, leukoplakia, carcinoma, oral cavity diseases and tumor of salivary gland & esophagus and precancerous lesions, esophagus inflammatory, functional disorders and

tumors. Stomach: gastritis, ulcer & tumors. Tumors and tumor like condition of the small and large intestine: polyps, carcinoid, carcinoma, lymphoma, pancreatitis and pancreatic tumors: i) exocrine, ii) endocrine salivary gland tumors : mixed, warthin's.

9.2 Jaundice: types, aetio-pathogenesis and diagnosis. Hepatitis: acute, chronic, neonatal. alcoholic liver disease. Cirrhosis: post necrotic, alcoholic, metabolic and portal hypertension liver abscesses; pyogenic, parasitic and amoebic, tumors of liver.

9.3Lymphatic system: diseases of the gall bladder: cholecystitis, cholelithiasis, and carcinoma. Lymphadenitis- nonspecific and granulomatous, causes of lymph node enlargements. Reactive hyperplasia, primary tumors - Hodgkin's and non Hodgkin's lymphomas, metastatic tumors, causes of splenic enlargements.

UNIT 10. Musculoskeletal system

10.1 Osteomyelitis, acute, chronic, tuberculosis, mycetoma. Metabolic diseases: rickets/osteomalacia, osteoporosis, hyperparathyroidism, Paget's disease. Tumors classification: benign, malignant, metastatic and synovial sarcoma. Arthritis: suppurative, rheumatoid. osteoarthritis, gout, tuberculosis.

UNIT 11. Dermatopathology

11.1 Skin tumors: squamous cell carcinoma, basal cell carcinoma, melanoma.

UNIT 12. Neuropathology

12.1 Inflammations and infections: TB meningitis, pyogenic meningitis, viral meningitis and brain abscess, tuberculosis, cysticercosis. CNS tumors, astrocytoma, neuroblastoma, meningioma & medulloblastoma.

Title of the course: Microbiology

COURSE CODE: 06ABPTR17312 **CREDITS: 04**

UNIT 1. General Microbiology

1.1 Infection: types, routes and spread of infection, source and reservoir of infections.

1.2 Bacterial cell: morphology limited to recognizing bacteria in clinical samples -shape, motility and arrangement, structures associated with virulence. Physiology: essentials of bacterial growth requirements, bacterial growth curve.

1.3 Staining: Gram's and ZN, culture medias and identification tests for bacteria.

1.4 Definition of asepsis, sterilization, disinfection. Sterilization, disinfection and universal precautions in relation to patient care and disease prevention.

1.5 Normal flora of the human body.

1.6 Antimicrobials: mode of action, interpretation of susceptibility tests, resistance spectrum of activity.

UNIT 2. Immunology

2.1 Basic principles of immunity, immuno biology: lymphoid organs and tissues.

2.2 Antigen, antibodies, antigen and antibody reactions with relevance to pathogenesis and serological diagnosis.

2.3 Humoral immunity and its role in immunity, cell mediated immunity and its role in immunity.

2.4 Immunology of hypersensitivity.

2.5 Autoimmunity.

UNIT 3. Bacteriology

3.1 Staphylococci, Streptococci and Pneumococci.

3.2 Bacillus anthracis.

3.3 Enterobacteriaceae: Salmonella.

3.4 Vibrios: V.cholerae and other medically important vibrios.

3.5 Non-sporinganaerobes, Sporing anaerobes: Clostridia.

3.6 Mycobacterium tuberculosis, M.leprae, atypical mycobacteria.

UNIT 4. Virology

4.1 General properties of virus: basic structure and broad classification of viruses, introduction to new emerging viruses.

4.2 Principles of laboratory diagnosis of viral diseases, immunity and prophylaxis of viral diseases, list of commonly used antiviral agents.

4.3 Hepatitis virus.

4.4 Polio virus.

4.5 HIV.

UNIT 5. Mycology

5.1 General properties of fungi.

5.2 Classification based on disease: superficial, subcutaneous, systemic and opportunistic mycoses.

5.3 General principles of fungal diagnosis, mycotoxins.

5.4 Antifungal agents.

UNIT 6. Parasitology

6.1 General properties of parasites.

6.2 Plasmodium, Wuchereria bancrofti.

UNIT 7. Clinical/Applied microbiology

7.1 CNS infections, acute respiratory infections.

7.2 Wound infection, opportunistic infections, zoonotic diseases, nosocomial infections.

7.3 Sexually transmitted diseases, pelvic inflammatory disease, urinary tract infections.

7.4 Pyrexia of unknown origin.

Title of the course : Pharmacology

COURSE CODE: 06ABPTR17313 **CREDITS: 03**

UNIT 1. General pharmacology

1.1 Introduction, definitions, classification of drugs, sources of drugs, routes of drug administration, distribution of drugs, metabolism and excretion of drugs.

1.2 Pharmacokinetics, pharmacodynamics, factors modifying drug response, adverse effects.

UNIT 2. Autonomic nervous system

2.1 General considerations – sympathetic and parasympathetic systems, receptors, somatic nervous system.

2.2 Cholinergic and anti-cholinergic drugs, adrenergic and adrenergic blocking drugs, peripheral muscle relaxants.

UNIT 3. Drugs used in cardiovascular disorders

3.1 Drugs used in the treatment of heart failure: digitalis, diuretics, vasodilators, ACE inhibitors.

3.2 Anti-hypertensive drugs: beta blockers, calcium channel blockers, ACE Inhibitors, central acting alpha agonists, peripheral alpha antagonists, direct acting vasodilators, antiarrhythmic drugs.

3.3 Drugs used in the treatment of vascular disease and tissue ischemia: vascular disease, hemostasis lipid-lowering agents, antithrombotics, anticoagulants and thrombolytics ischemic heart disease – nitrates.

UNIT 4. Respiratory pharmacology

4.1 Drugs used in treatment of obstructive & restrictive airway diseases & respiratory tract infections.

UNIT 5. Drugs used in neuropsychiatric disorders

5.1 Sedative-hypnotic & antianxiety drugs: barbiturates, benzodiazepine, benzodiazepines, other anxiolytics.

5.2 Drugs used in treatment of mood disorders: monoamine oxidase inhibitors, tricyclic antidepressants, atypical antidepressants, lithium.

5.3 Antipsychotic drugs.

5.4 Antiepileptic drugs.

UNIT 6. Drugs used in movement disorders

6.1 Drugs used in treatment of Parkinson's disease, spasticity and skeletal muscle relaxants.

UNIT 7. Drugs used in inflammatory/immune diseases

7.1 Non-narcotic analgesics and nonsteroidal anti-inflammatory drugs: acetaminophen, aspirin NSAIDs, nonaspirin NSAIDs, drug interactions with NSAIDs.

7.2 Glucocorticoids: pharmacological uses of glucocorticoids, adverse effects, physiological use of glucocorticoids.

7.3 Drugs used in treatment of arthritic diseases: rheumatoid arthritis, osteoarthritis, gout.

7.4 Drugs used in the treatment of neuromuscular immune/inflammatory diseases: myasthenia gravis, idiopathic inflammatory myopathies, systemic lupus erythematous, scleroderma, demyelinating disease.

UNIT 8. Drugs used in GIT diseases

8.1 Gastrointestinal pharmacology: peptic ulcer disease, constipation, diarrhea.

UNIT 9. Endocrine pharmacology

9.1 Drugs used in treatment of diabetes mellitus: insulin, oral hypoglycemic drugs used in thyroid disorders, thioamides: propylthiouracil, iodineiodides, thiocyanates, radioactive iodine, beta blockers.

UNIT 10. Geriatrics

10.1 Pharmacology and the geriatric population: adverse effects of special concern in the elderly, dementia, postural hypotension.

Title of the course : Foundation of exercise therapy and therapeutic massage

COURSE CODE : 06ABPTR17314 **CREDITS : THEORY :03**
PRACTICAL : 01

UNIT 1. Introduction to Exercise Therapy

1.1 The aims of Exercise Therapy, the techniques of Exercise Therapy, approach to patient's problems, assessment of patient's condition – measurements of vital parameters.

1.2 Starting positions – fundamental positions & derived positions, planning of treatment.

UNIT 2. Methods of testing

2.1 Functional tests and measurement of joint range: ROM-definition, normal ROM for all peripheral joints & spine, goniometer-parts, types, principles, uses, limitations of goniometry, techniques for measurement of ROM for all peripheral joints.

2.2 Manual muscle testing: introduction to MMT, principles & aims, indications & limitations, techniques of MMT for group & individual: techniques of MMT for upper limb / techniques of MMT for lower limb / techniques of MMT for spine, face.

2.3 Static power test, dynamic power test, endurance test, speed test.

2.4 Chest expansion Measurement, Tests for sensation.

UNIT 3. Anthropometric measurements

3.1 Muscle girth – biceps, triceps, forearm, quadriceps, calf, measurement of limb length: true limb length, apparent limb length, segmental limb length, measurement of the angle of pelvic inclination.

UNIT 4. Relaxation

4.1 Definitions: muscle tone, postural tone, voluntary movement, degrees of relaxation, pathological tension in muscle, stress mechanics, types of stresses, effects of stress on the body mechanism, indications of relaxation, methods & techniques of relaxation-principles & uses: general, local, Jacobson's, Mitchel's.

UNIT 5. Passive movements

5.1 Causes of immobility, Classification of Passive movements, Specific definitions related to passive movements, Principles of giving passive movements, Indications, contraindications, effects and uses, Techniques of giving passive movements.

UNIT 6. Active movements

6.1 Definition of strength, power & work, endurance, muscle actions.

6.2 Physiology of muscle performance: structure of skeletal muscle, chemical & mechanical events during contraction & relaxation, muscle fibre type, motor unit, force gradation.

6.3 Causes of decreased muscle performance and physiologic adaptation to training: strength & power, endurance.

6.4 Types of active movements.

UNIT 7. Free exercise

7.1 Classification, principles, techniques, indications, contraindications, effects and uses.

UNIT 8. Active Assisted Exercise

8.1 Principles, techniques, indications, contraindications, effects and uses.

8.2 Assisted-resisted exercise: principles, techniques, indications, contraindications, effects and uses.

UNIT 9. Resisted exercises

9.1 Definition, principles, indications, contraindications, precautions & techniques, effects and uses.

9.2 Types of resisted exercises: manual and mechanical resistance exercise, isometric exercise, isotonic exercise: concentric and eccentric, dynamic exercise: constant versus variable resistance, isokinetic exercise, Open-chain and Closed-chain exercise.

UNIT 10. Therapeutic massage

10.1 History and classification of massage technique.

10.2 Principles, indications and contraindications of massage.

10.3 Physiological and therapeutic uses of specific manipulations.

10.4 Technique of massage manipulations.

Title of the course: Clinical observation

COURSE CODE : 06ABPTR17315 **CREDITS: 04**

Course Detail: Clinical Observation is used by physiotherapist in order to glean information about patients referred for physiotherapy in a clinical setting. Students will be under continuous supervision and guidance of the faculties. This course will provide students information about clinical practices in communication with patients, assessment, examination and treatment.