SYLLABUS OF PART - I

SUBJECT: CONSERVATIVE DENTISTRY AND ENDODONTICS

ANATOMY

1. Gross anatomy of the face:

a. Muscles of the face and neck including muscles of mastication and deglutition, muscles of facial expression and Facial spaces. EMBRYOLOGY: Development of face, paranasal sinuses and the associated structures and their anomalies.

b. Functional anatomy of mastication, deglutition and speech

c. Anatomy of Mandible and maxilla:

2. General and histological structure of bones.

3. TMJ anatomy and function

4. Oral Cavity:

4 a. Vestibule and oral cavity proper

4b. Tongue : development, anatomy, innervations, blood supply and histology

4c. Palate –: development, anatomy, innervations, blood supply and histology

5. Anatomy of Nasal Cavity, Nasal septum ,Lateral wall of nasal cavity and Paranasal air sinuses

6. Saliva and Salivary glands :

6a. Anatomic considerations. Salivary glands – structure, function, clinical considerations6b. Saliva composition and applied aspects.

7. Triangles of the neck with special reference to Carotid, Digastric triangles and midline structures.

8.Arterial and venous drainage of head and neck

9. Classification of cranial nerves and autonomic nervous system of head and neck with specialemphasis on Facial and Trigeminal Nerves

10. General Anatomy : Jugular system : Internal jugular External jugular

11. TEETH

- Detailed anatomy of deciduous and permanent teeth, general consideration in applied anatomy ofpermanent dentition, form, function, developmental anomalies.

- Internal anatomy of permanent teeth and its significance

- Enamel – development and composition, physical characteristics, chemical properties, histologicalfeatures. Age changes and clinical considerations

- Dentin – development, physical and chemical properties, structure type of dentin, innervations,age and functional changes.

- Pulp – development, histological structures, innervations, functions, regressive changes, clinicalconsiderations.

- Cementum – composition, cementogenesis, structure, function, clinical consideration. •

- Periodontal ligament – development, structure, function and clinical consideration

- 12. Development and Eruption of teeth.

13.Contacts, contours and Occlusion

14 HISTOLOGY: 1. Study of epithelium of oral cavity and the respiratory tract 2. Connective tissue 3. Musculartissue 4. Nervous tissue 5. Blood vessels 6. Cartilage 7. Bone and tooth 72 8. Tongue 9. Salivary glands 10. Tonsil, thymus, lymph nodes

II. Physiology

General Physiology: Cell , Body Fluid Compartments - Classification - Composition and Cellular transport , Resting Membrane Potential and action potential

Muscle Nerve Physiology:

- Structure of a neuron and properties of nerve fibres

- Structure of muscle fibres and properties of muscle fibres

- Neuromuscular transmission

- Mechanism of muscle contraction

- Taste and Taste buds and pathways of taste sensation.

Blood:

- Composition, volume, functions, blood groups, RBC and Haemoglobin
- WBC – Structure and functions
- Platelets – functions and applied aspects
- Plasma proteins
- Blood Coagulation with applied aspects
- Blood transfusion, circulation, heart, pulse, blood pressure, shock.
- Lymph and applied aspects

Respiratory System:

- Respiration and respiration control
- Anoxia, hypoxia, asphyxia, artificial respiration .Hypoxia, effects of increased barometric pressure anddecreased barometric pressure

Cardio-Vascular System:

- Cardiac Cycle and pulse.
- Regulation of heart rate/ Stroke volume / cardiac output / blood flow and Electrocardiogram
- Regulation of blood pressure.
- Shock, hypertension, cardiac failure.

Excretory System:

- Renal function tests and their significance.

Gastro Intestinal System

- Composition, functions and regulation of: Saliva and Gastric juice

- Mastication and deglutition

Endocrine System:

- Hormones – classification and mechanism of action.
- General principles of endocrine activity and disorders relating to pituitary, thyroid, parathyroid,adrenals including pregnancy and lactation.
- Thyroid and Parathyroid hormones
- Pancreatic hormones
- Adrenal hormones

Central Nervous System:

- Ascending tract with special references to pain pathway
- SPECIAL SENSES: Taste, Gustation and Olfaction

Applied Physiology:

- Mastication, deglutition, digestion and assimilation, fluid and electrolyte balance.
- Physiology of saliva – composition, function, clinical significance
- Clinical significance of vitamins, diet and nutrition – balanced diet.
- Physiology of pain, sympathetic and Para sympathetic nervous system, pain pathways, physiology ofpulpal pain, Odontogenic and non Odontogenic pain, pain disorders – typical and atypical.
- **Biochemistry:**

- Osmotic pressure, Electrolyte dissociation, Oxidation and Reduction.

- Carbohydrates – Disaccharides specifically maltose, lactose, sucrose - Digestion of starch/absorption of glucose - Metabolism of glucose, specifically glycolysis, TCA cycle, gluconeogenesis - Blood sugar regulation - Glycogen storage regulation - Glycogen storage diseases - Galactosemia and fructosemia
- Lipids - Fatty acids- Essential/non essential - Metabolism of fatty acids- oxidation, ketone body formation, utilization ketosis - Outline of cholesterol metabolism- synthesis and products formed from cholesterol

- Protein - Amino acids- essential/non essential, complete/ incomplete proteins -Transamination/ Deamination
- Vitamins and their metabolic role- specifically vitamin A, Vitamin C, Vitamin D, Thiamin, Riboflavin, Niacin, Pyridoxine

Pathology:

1. **Inflammation and Repair**

General Principles of Inflammation and Repair

- Repair and regeneration, necrosis and gangrene
- Role of complement system in acute inflammation
- Role of arachidonic acid and its metabolites in acute inflammation
- Growth factors in acute inflammation
- Role of molecular events in cell growth and intercellular signaling cell surface receptors
- Role of NSAIDS in inflammation
- Cellular changes in radiation injury and its manifestations

2. **Hemostasis:**

- Role of Endothelium in thrombo-genesis
- Arterial and venous thrombi , Disseminated Intravascular Coagulation
- Shock: •Pathogenesis of hemorrhagic, neurogenic, septic, cardiogenic shock, circulatorydisturbances, ischemic hyperemia, venous congestion, oedema, infarction.

3. **Wound Healing:**

4. **Hypersensitivity:**

• Anaphylaxis • Type II Hypersensitivity • Type III Hypersensitivity

• Cell mediated Reaction and its clinical importance • Systemic Lupus Erythmatosis

5. **Neoplasia:**

- Carcinogenesis & Carcinogens – Chemical, Viral and Microbial
- Grading and Staging of Cancer,
- Characteristics of benign and malignant tumors

6. **Aids** Management of Immune deficiency patients requiring surgical procedures

7. Ghons complex, post primary pulmonary tuberculosis – pathology and pathogenesis
8. Circulatory disturbances – ischemia, hyperemia, edema, thrombosis, embolism, infarction,allergy and hypersensitivity reaction.

9. Developmental disturbances of Teeth,
10. Dental Caries, Regressive changes of teeth, pulp, periapical pathology, pulp reaction to dental caries and dental procedures.
11. Bacterial, viral, mycotic infections of the oral cavity.
12. Oral manifestations of Systemic diseases.

Microbiology:

- General Bacteriology- Identification of bacteria, Culture media and culturing techniques
- Oral Microbial flora in health and disease
- Pathways of pulpal infection, oral flora and micro organisms associated with endodontic diseases, pathogenesis, host defence, bacterial virulence factors, healing, theory of focal infections,
- Microbes in relevance to dentistry – streptococci, staphylococci, lactobacilli, cornye bacterium, actinomycetes, clostridium, neisseria, vibrio, bacteroids, fusobacteria, spirochetes, mycobacterium, virus and fungi.
- Cross infection, infection control, infection control procedure, sterilization and disinfection.
- Immunology – antigen antibody reaction, allergy, hypersensitivity and anaphylaxis, auto immunity, grafts, viral hepatitis, HIV infections and aids.
- Identification and isolation of microorganisms from infected root canals.
- Virology: Herpes, Hepatitis and HIV viruses
- Mycology: Candidiasis

Pharmacology:

1. Definition of terminologies used
2. Dosage and routes of administration of drugs
3. Action and fate of drugs in the body
4. Drugs acting on the CNS

5. Drug reactions and Interactions

6. General and local anesthetics:

- Local anesthesia – Ideal properties, agents and chemistry, pharmacological actions, fate andmetabolism of anesthetic, techniques and complications.

- General anesthesia – pre medications, neuro muscular blocking agents, induction agents, inhalationanesthesia, and agents used, assessment of anesthetic problems in medically compromised patients.

- Anesthetic emergencies

7. Antihistamines, corticosteroids,

8. hypnotics, antiepileptics, and & tranquilizers

9. Chemotherapeutics and antibiotics

10. Analgesics , anti-inflammatory and antipyretics drugs.

11. Antiseptics, sialogogues, and anti – sialogogues

12. Haematinics

13. Anti – diabetic therapy

14. Vitamins – A B Complex, C, D, E, K

14. Steroids

15. Hemostasis, and haemostatic agents, anticoagulants

16. Management of medically compromised patients including medical emergencies in the dental chair

17. Drug therapy of Emergencies; Seizures, Anaphylaxis, Shock and Diabetic ketoacidosis

Research Methodology and Biostatistics:

- Essential features of a protocol for research in humans

- Experimental and non-experimental study designs
- Ethical considerations of research

Biostatistics:

- Basic concepts, Sampling, Health information systems – collection, compilation, presentation ofdata.
- Elementary statistical methods – presentation of statistical data, Statistical averages – measures ofcentral tendency, measures of dispersion, Normal distribution.
- Tests of significance – parametric and non – parametric tests (Fisher extract test, Sign test, Median test, Mann Whitney test, Krusical Wallis one way analysis, Friedmann two way analysis, Regression analysis),Correlation and regression

Applied Dental Materials:

- Physical and mechanical properties of dental materials.
- Impression materials
- Restorative materials,
- Composite resins and recent advances in composite resins,
- Principles of adhesion, bonding agents and recent developments
- Tarnish and corrosion,
- Dental amalgam,
- Dental Casting alloys,
- Inlay wax, Die materials and Investment materials
- Casting procedures and casting defects,
- Dental cements for restoration and pulp protection (luting, liners, bases) cavity varnishes.
- Dental ceramics-recent advances,
- Finishing and polishing materials.

  Biocompatibility of Dental Materials and Methods of testing biocompatibility of materials used.
- Soldering and Welding.
- Dental cements for restoration and pulp protection (luting, liners, bases) cavity varnishes.

- Dental ceramics-recent advances,
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- Biocompatibility of Dental Materials and Methods of testing biocompatibility of materials used.
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