Veterinary Pathology

1. General Pathology

1.1 Etiology: Predisposing causes, intrinsic and extrinsic causes, chemical causes, biological causes, portal of infections, mode of transmission: direct, indirect, vectors, local defense mechanism, resistance to infection

1.2 Cell injury: causes of cell injury, mechanisms of cell injury, ischaemia and hypoxia, cloudy swelling, fatty change, hyline degeneration, hydropic degeneration, mucinous or mucous degeneration, Mucoid or myxomatous degeneration, Fibrinous infiltration, amyloidosis, Pigments: melanin, lipofuscin, haemosiderin, bilirubin, glycogen infiltration, apoptosis, Necrosis, Gangrene: Dry and Moist, Rigor mortis, Post mortem changes, Pathological calcification

1.3 Inflammation: Definition, etiology, cardinal signs, vascular changes, Acute inflammation: Chemical mediators' inflammation, cellular phenomenon, Exudate and transudate and their differences.

1.4 Classification of inflammation: serous, mucous/catarrhal, fibrinous, suppurative/purulent and haemorrhagic inflammations. Differences of Acute and chronic inflammations, mechanism and pathology of Chronic inflammation.

1.5 Fever: causes and pathogenesis

1.6 Hyperaemia, congestion, dehydration, Ischaemia, haemostasis , thrombosis, embolism.Infarction

1.7 Edema (types, causes and pathophysiology) and shock

1.8 Healing and repair: Repair by regeneration, repair by substitution, Healing of wound by first and second intension, granulation tissues, factors affecting wound healing. Healing of special tissues eg epithelium, connective tissues, cartilage and bone, blood vessels and nerves

1.9 Disturbances of growth: Aplasia, Hypoplasia, Atrophy, Hypertrophy, hyperplasia, Metaplasia and Dysplasia.

1.10 Physical injuries: Heat and heat stroke, Burns- first, second, third and fourth degree, Excess cold/ frost bite, light/ photosensitization,electrocution, Ionizing radiation.

1.11 Chemical injuries: Acid, alkali, lead, arsenic, phosphorus, carbon monoxide, barbiturates, anaesthesia, hydrocyanic acid, nitrites and nitrate, chlorinated hydrocarbons, organophosphates

1.12 Neoplasia: Definition, Aetiology- intrinsic and extrinsic factors, chemical carcinogens, parasites,viruses and oncogene

1.13 Classification of neoplasia: benign and malignant, macroscopic and microscopic appearences, clinical features of neoplasm, laboratory diagnosis of cancer (cytology, molecular tools, tumor markers and staging)

1.14 Tumors of different tissues- connective tissues, epithelial and related tissues, glandular tissues, muscle and nervous tissues, cartilaginous and osseous tissues.

1.15 Tumors of different body parts: horn cancer, anal gland, ovary, uterus, vagina (TVT), testes, and penis and prostrates, Mammary gland tumor and skin tumors.

1.16 Disorders of immune systems(Immunopathology): Host defence mechanisms, cells of immune system, cytokines- messenger molecules of immune systems, hitocompatibiity antigen, induction and regulationof immune responses, Hypersensitivity reactions- Type I (Anaphylatic) hypersensitivity reaction, Type II(Antibody dependent cytooxicity) Hypersensitivity reaction, Type III (Immune complex mediated) Hyper sensitivity reaction. , Type IV 9 cell mediated or delayed) type of hypersensitivity reaction, transplant rejection, Autoimmune diseases, Immuno deficiency diseases.

1.17 Gout, Jaundice

1.18 Physical and chemical injuries- Abrasion, contusion, laceration, rupture, fracture, concussion, sprain, luxation/ distorsion, Pressure sores

1.19 Malposition's- volvulus, intussuscepting, prolapsed, eversion, eventration, hernia, strangulation

1.20 Genetic diseases, developmental disturbance eg agenesis, anomalies, fissures, fusion of sex characters and monsters

2. Systemic Pathology

2.1 Diseases of Cardiovascular system: Developmental defects, Disease of pericardium, myocardium and endocardium, Diseases of arteries and veins and heart. Diseases of lymph nodes and lymphatics, Conditions affecting blood, Conditions affecting spleen and bone marrow, Anemia., Neoplasms of cardiovascular systems.

2.2 Diseases of Reparatory system: Diseases of nasal cavities-eg rhinitis and sinusitis, larynx, Trachea and Lungs, pleura and thoracic cavity. Neoplasms of respiratory system

2.3 Diseases of digestive system: Diseases of mouth and pharynx and esophagus, diseases of stomach and forestomach, Diseases of intestine and peritoneum, Diseases of liver and pancreas, Neoplasms of digestive system.

2.4 Diseases of urinary system: Developmental anomalies, Diseases of kidney, Diseases of bladder, ureter, and urethra, Neoplasms of urinary system.

2.5 Diseases of mammary gland.

2.6 Diseases of endocrine system and neoplasms of endocrine system.

2.7 Diseases of haemopoietic system

2.8 Diseases of nervous system

2.9 Diseases of reproductive system: Disease of male genital system and accessory sex glands, Disease of female genital system,

2.10 Diseases of muscular systems

2.11 Diseases of bones and ligaments, Diseases of ears, Diseases of eyes,Diseases of skin, Disease of hoof, nails and horns

3. Specific Pathology

3.1 Bacterial diseases: General introduction, etiology, pathogenesis, clinical signs, macroscopic and microscopic lesions, sequele and diagnosis of Tuberculosis, Johne's disease, Actinomycosis and Actinobacillosis, Anthrax, Black Quarter, Calf scours, Enterotoxaemia, Bovine bacillary hemoglobinurea and Malignant edema, Braxy and Gas gangrene, Nocardiosis, Campylobacteriosis, Hemophilus, Salmonellosis, Tetanus, Enterotoxaemia and Botulism, Colibacillosis in swine, CCPP and CBPP, Strangles and Glanders, Brucellosis, Q-fever and Ehrlichiosis, Mastitis, Porcine enzootic pneumonia, Chlamydial group of diseases, Haemorrhagic septicaemia, Swine erysipelas, Listeriosis, diseases causing abortion-Brucellosis, Campylobacteriosis(vibriosis).

3.2 Viral diseases: General introduction, etiology, pathogenesis, clinical signs, macroscopic and microscopic lesions, and diagnosis of FMD, Vesicular stomatitis, Ephimeral fever, Pox viruses, Bovine viral diarrhea and Malignant catarrhal fever, Vesicular exanthema, Maedi, Jaagsiekte, Scrapie and prion diseases- Bovine and feline spongiform encephalopathies, Rabies, Aujeszkey's disease, Canine distemper, Canine parvovirus infection, Feline panleukopenia, Infectious canine hepatitis, Hog cholera, Porcine reproductive and respiratory syndrome(PRRS), Diseases caused by rota and corona viruses, Infectious bovine rhinotracheitis, contagious ecthyma, Caprine arthritis encephalitis, Rinderpest, Peste des petits ruminants(PPR) and Blue tongue, Equine infectious anemia, Equine influenza, Equine viral arteritis, African Horse sickness, Equine encephalomyelitis and equine rhinopneumonitis.

3.3 Fungal diseases:Introduction, and lesions of: Ring worm, favus,, Zygomycosis, Histoplasmosis, Cryptococosis and Candidiasis, Aspergillosis, Aflatoxicosis and Degnala disease, Ochratoxicosis, Citrinin toxicosis Trichothecene toxicosis and Ergotoxicosis.

3.4 Parasitic diseases: Intoduction, etiology, pathogenesis, clinical signs and diagnosis of: Fascioliasis, Amphistomiasis, Ascariasis, Strongylosis, Hemonchosis, Spirocercosis, Filariasis, Hookworm, Tapeworm infections, Coccidiosis, Toxoplasmosis, Babesiosis, Theileriasis, Trypanosomiasis – Surra, Anaplasmosis. Nasal schstosomiasis, External parasitic diseases-mange, botfly, maggot infestation, Sarcocystosis and Cryptosporidiosis, Hepatozoan canis infection.

3.5 Rickettsial diseases:Ehlichiosis and Leptospirosis,

3.6 Nutritional deficiency diseases: Pathogical changes in nutritional and metabolic diseases-deficiency/excess of carbohydrates, proteins, fats, minerals and vitamins and in conditions like milk fever, pregnancy toxaemia, post-parturient haemoglobinuria, ketosis, hypomagnesemic tetany, azoturia, piglet anaemia and sway back/enzootic ataxia and Rheumatism like syndrome. Pathogenesis, gross and microscopic pathology of heavy metal toxicities like arsenic, copper, lead, zinc, selenium, manganese, mercury, cadmium, strychnine, nitrate/nitrite, hydrocyanic acid (HCN), fluoride, oxalate toxicities and insecticide/pesticide poisoning.

Deficiency of Fat soluble vitamins-vitamins A, D, E, and K. Water soluble vitamins- Viamins B1, riboflavin(Vit B2), Pyridoxine(B6), Pantothenic acid, Biotin, Follic acid, Cobalamin(B12), choline and Vitamin C

4. Poultry Pathology

4.1 Bacterial diseases: Introduction, etiology, pathogenesis, clinical signs, PM lesion and diagnosis of: Pullorum disesae, Fowl typhoid and Paratyphoid, Fowl coryza and Fowl cholera, Collibacillosis and Clostridial diseases (Botulism, Necrotic enteritis, Gangrenous dermatitis, Ulcerative enteritis), *Mycoplasma gallisepticum* infection (chronic respiratory disease), *Mycoplasma synoviae* infection, Avian chlamydiosis (Psittacosis), Avian listeriosis, Staphylococcal and streptococcal infections, Tuberculosis, Pseudotuberculosis (Yersiniosis) and Avian Spirochaetosis.

4.2 Viral diseases- Introduction, etiology, pathogenesis, clinical signs, PM lesion and diagnosis of Newcastle disease and Infectious bronchitis, ILT, Infectious stunting syndrome, and Reovirus infections, Avian influenza, Gumboro disease, Inclusion body hepatitis and Hydro-pericardium syndrome, Avian nephritis, Reovirus infection, Avian encephalomyelitis, Fowl pox, Chicken infectious anemia, EDS-76, Tumerogenic disease of poultry- introduction, etiology, pathogenesis clinical signs, post mortem lesion and microscopic lesions and diagnosis of Mareks disease and Avian leukosis complex.

4.3 Parasitic diseases: External parasites, internal parasites- round and tape worms, Coccidiosis, Histomoniasis, Leucocytozoon infection.

4.4 Fungal infection-introduction, etiology, pathogenesis and lesions and diagnosis of Aspergillosis, Thrush, Favus and Mycotoxicosis. Pathogenesis, gross and microscopic pathology of Aflatoxicosis, Ochratoxicosis, Citrinin toxicosis and Trichothecene toxicity.

4.5 Syndromes- Fatty liver haemorrhagic syndrome, Acute death syndrome, Runting and stunting syndrome, Swollen head syndrome, Hydropericardium syndrome and ascites syndrome

4.6 Nutritional, metabolic and Miscellaneous diseases- Pathogenesis, gross and microscopic pathology of major diseases due to deficiency/excess of carbohydrates, proteins, minerals and vitamins in poultry. Miscellaneous Diseases: Pathology of important vices and miscellaneous conditions.

5. Fish Pathology

5.1 Fish pathology (Anatomy, physiology, immunology and inflammatory response in fish)

5.2 Bacterial and Viral diseases affecting fish

5.3 Mycotic and parasitic diseases affecting fish

5.4 Nutritional and toxic pathology of fish

5.5 Miscellaneous non-infectious diseases associated with physicochemical abnormalities of water.

5.6 Neoplasia in fish

6. Clinical Pathology

6.1 Haematogical Examination:Total count of RBC, Total count of WBC, Total count of Platelets,Estimation Of PCV, DLC and ESR

6.2 Biochemcal examinations: Estimation of Total Proteins, Albumin, Serum Cholesterol, Calcium, Phosphlkaline phosphatase, Acetyl cholinesterase

6.3 Histological examination of tissues, staining procedures: H& E, Grams, Giemsa

6.4 Microbiological and Parasitological examination of pathological samples: medias, culture, staining- Gram's/Acid Fast, for fungus, microscopic examination

6.6 Collection preservation and dispatch for haematological, bacteriological, virological and pathological specimens.

6.7 Advaced techniques for animal disease diagnosis: ELISA, PCR, Northern, western and southern blotting, Immunoperoxidase test, Immuno-histochemistry, Insitu hybridization, PAGE, FAT.

6.8 Biopsy and exfoliatve cytology: Application and use

7. Post Mortem examination of animals and birds.