

DEPARTMENT OF VETERINARY PATHOLOGY

SEMESTER -III

GENERAL VETERINARY PATHOLOGY

VPP-211

Credit Hours 1+1=2

THEORY

Introduction and scope of Veterinary Pathology, Brief outline of major intrinsic and extrinsic causes of disease. Pathology of hyperaemia, congestion, haemorrhage, edema, thrombosis, embolism, infarction and shock.

Acute cellular swelling and its variants. Glycogen overload and fatty change. Heat shock proteins and lysosomal storage diseases.

Causes and mechanism of reversible and irreversible cell injury, necrosis and its types, apoptosis, differences between post-mortem autolysis and necrosis. Gangrene. Major exogenous and endogenous pigments. Metastatic and dystrophic calcification.

Jaundice in animals. Photosensitization dermatitis. Aplasia, hypoplasia, atrophy, hypertrophy, hyperplasia, metaplasia and dysplasia. Inflammation: definitions, classification, various cell types and their functions, mediators, cardinal signs and systemic effects.

Cell cycle and cyclins, soluble and insoluble mediators (including growth factors).

Wound healing by primary and secondary intention. Pathology of autoimmune diseases and amyloidosis.

Definitions, general characteristics and classification of neoplasms. Differences between benign and malignant tumours, etiology and spread of neoplasms, immunity and neoplasia, effects and diagnosis of neoplasia, stages and grades of neoplasms.

PRACTICAL

Study of gross pathological specimens and recognition of pathological lesions. Post-mortem (P.M.) techniques. Collection of morbid materials for pathological diagnosis. Techniques for preservation and despatch of materials. Section cutting, staining and identification of

microscopic lesions. Examination of slides depicting changes in cells and tissues. Study of histopathological slides showing haemorrhage, congestion, oedema, infarction, hyperplasia, metaplasia, hypertrophy, necrosis, cloudy swelling, amyloid degeneration, fatty changes, calcification . infiltration etc. Examination and interpretation of oncological tissue slides.

SEMESTER - IV

SYSTEMIC VETERINARY PATHOLOGY

VPP-221

Credit Hours 2+1=3

THEORY

Pathological changes including neoplasms in non-infectious disease conditions affecting Digestive System (mouth, pharynx, salivary glands, oesophagus, stomach, intestines, liver, gall bladder, pancreas), Respiratory System (nasal cavity, larynx, bronchi, trachea, lungs and pleura), Musculoskeletal System (muscle, bone, joints, ligaments, tendons), Cardio-vascular System (pericardium, myocardium, epicardium, endocardium, arteries, veins), Haematopoietic System (bone marrow), Lymphoid System (lymph nodes, vessels and spleen), Urinary System (kidneys, ureter, bladder and urethra), Reproductive System (male and female genital organs), Nervous System (brain, spinal cord and peripheral nervous system), Endocrine System (adrenal, thyroid, thymus, pituitary, parathyroid and pancreas). Skin and Appendages (hoof and horn), Ear and Eye.

PRACTICAL

Post-mortem examination of large and small animals, recording of gross lesions and compiling the postmortem report (including vetero-legal cases), despatch of morbid material in vetero-legal cases, study of gross specimens and histopathological slides pertaining to systemic pathology. Collection and examination of clinico-pathological specimens (blood, urine, body fluids, etc.) for diagnosis of systemic affections.

SEMESTER- V

SPECIAL VETERINARY PATHOLOGY

VPP- 311

Credit Hours 2+1=3

THEORY

General pathology of viral infections. Pathogenesis, gross and microscopic pathology of Foot and mouth disease, Rinderpest, malignant catarrhal fever, blue tongue, infectious bovine rhinotracheitis, bovine viral diarrhoea, caprine encephalitis-arthritis complex, PPR, equine infectious anaemia, equine influenza, equine viral arteritis, equine rhinopneumonitis, African horse sickness, classical swine fever, Aujeszky's disease, swine influenza, rabies, canine distemper, infectious canine hepatitis, canine parvovirus, feline panleukopenia, maedi, jaagziekte, scrapie, bovine and feline spongiform encephalopathies, pox virus diseases in different animals. Vesicular stomatitis, vesicular exanthema, equine encephalomyelitis, diseases caused by rota and corona viruses,

General pathology of bacterial infections. Pathogenesis, gross and microscopic pathology of Tuberculosis, Johne's disease, actinomycosis, actinobacillosis, anthrax, clostridial group .of diseases, streptococosis including strangles in horses, staphylococosis, glanders, pasteurellosis, leptospirosis, listeriosis, swine erysipelas, brucellosis, corynebacterium infections, nocardiosis, campylobacteriosis, Hemophilus, salmonellosis and colibacillosis in swine.

General pathology of mycoplasmal, chlamydial and rickettsial infections and their differentiation. Pathogenesis, gross and microscopic pathology of contagious bovine pleuropneumonia (CBPP), contagious caprine pleuropneumonia (CCPP), porcine enzootic pneumonia, chlamydial group of diseases and anaplasmosis, Q-fever and ehrlichiosis.

General pathology of mycotic infections. Pathogenesis, gross and microscopic pathology of superficial and .deep mycoses - ringworm, favus, aspergillosis, zygomycosis, histoplasmosis, cryptococosis and candidiasis.

General pathology of helminthic and protozoal infections. Pathogenesis, gross and microscopic pathology of fascioliasis, amphistomiasis, ascariasis, strongylosis, hemonchosis, spirocercosis, filariasis, hookworm, tapeworm infections, coccidiosis, toxoplasmosis, babesiosis, theileriasis and trypanosomiasis. Pathological changes in nutritional and metabolic diseases: (deficiency/excess of carbohydrates, proteins, fats, minerals and vitamins and in conditions like milk fever, pregnancy toxemia, post-parturient haemoglobinuria, ketosis, hypomagnesemic tetany, azoturia, piglet anaemia and sway back/enzootic ataxia and Rheumatism like syndrome).

General pathology of toxicosis. Pathogenesis, gross and microscopic pathology of heavy metal toxicities like arsenic, copper, lead, mercury, cadmium, strychnine, nitrate/nitrite, hydrocyanic acid (HCN), fluoride, oxalate toxicities, insecticide/pesticide poisoning. Pathogenesis, gross and microscopic pathology of aflatoxicosis, ochratoxicosis, trichothecosis and ergototoxicosis. Pathology of exotic and emerging diseases.

PRACTICAL

Post-mortem examination of large and small animals for diagnosis of special diseases. Study of gross lesions particularly those of pathognomonic significance. Study of histopathological slides pertaining to special pathology including special staining of causative agents. Study of rapid diagnostic techniques like biopsy, exfoliative cytology, frozen sectioning.

SEMESTER -VI

AVIAN PATHOLOGY

VPP-321

Credit Hours 1+1=2

THEORY

Viral Diseases: Pathogenesis, gross and microscopic pathology of Ranikhet disease, infectious bursal disease, infectious bronchitis, infectious laryngotracheitis, fowl pox, avian influenza, Marek's disease, leukosis/sarcoma group of diseases, avian encephalomyelitis, inclusion body hepatitis, hydro-pericardium syndrome, chicken infectious anaemia Avian nephritis, egg drop" syndrome, infectious stunting syndrome, reovirus infections.

Bacterial Diseases: Pathogenesis, gross and microscopic pathology of Colibacillosis (colisepticaemia, yolk sac infection, egg peritonitis, coligranuloma). infectious coryza, clostridial diseases (botulism, necrotic enteritis, gangrenous dermatitis, ulcerative enteritis),

salmonellosis (Pullorum disease, fowl typhoid, paratyphoid infection), fowl cholera, tuberculosis and spirochaetosis

Mycoplasmal and Chlamydial Diseases: Pathogenesis, gross and microscopic pathology of Mycoplasma gallisepticum infection (chronic respiratory disease), Mycoplasma synoviae infection, Avian chlamydiosis (psittacosis).

Fungal Diseases: Pathogenesis, gross and microscopic pathology of aspergillosis, thrush and favus. Mycotoxicosis: Pathogenesis, gross and microscopic pathology of Aflatoxicosis, ochratoxicosis and trichothecenes.

Parasitic Diseases: Pathogenesis, gross and microscopic pathology of Helminthic diseases (flukes, cestodes, nematodes), protozoal diseases (coccidiosis, histomoniasis), ectoparasites, Avian malaria Nutritional and metabolic diseases: Pathogenesis, gross and microscopic pathology of major diseases due to deficiency/excess of carbohydrates, proteins, minerals and vitamins in poultry Vices and Miscellaneous Diseases: Pathology of important vices and miscellaneous conditions. Pathology of exotic and emerging poultry diseases.

PRACTICAL

Post mortem examination and diagnosis of poultry diseases based upon clinical signs and gross lesions Writing of postmortem report. Collection, preservation and dispatch of morbid materials in poultry diseases. Clinical examination of blood, faeces and other tissues/fluids for poultry disease diagnosis Submission of feed samples for analysis.

Study of gross specimens and histopathological slides of different diseases of poultry.

SEMESTER- VI

AQUATIC ANIMAL DISEASES, HEALTH CARE AND MANAGEMENT

VPP-322

Credit Hours 1+1=2

THEORY

Introduction to aquatic animals, aquatic animal ecology and national economy. Fishery as a method of recycling animal and poultry wastes and feed surplus. Types of common aquatic animals, fresh and saline water fish, their collection. Care and breeding, egg and spawn management. Integrated aquaculture. Ornamental fisheries. Aquatic animal feeds and feeding. Economic production; Pond and nursery management Inland and marine capture fisheries. Stock assessment and population dynamics. Fish harvesting and process technology, fish preservation, inspection, utilization of fish in animal feed. Anatomy, physiology, immunology and inflammatory response in finfish and shellfish (crustaceans and mollusks).

OIE regulations related to aquatic animal health.

Viral, bacterial, mycotic and parasitic diseases affecting aquatic animals. Nutritional and toxic pathology. Miscellaneous non-infectious diseases associated with physicochemical abnormalities of water. Neoplasia of teleosts. Vaccines and vaccination.

PRACTICAL

Identification of culturable fishes. Techniques to study growth and age in fishes. Composite fish culture techniques. Management of artificial diets, induced breeding techniques. Determination of hydrological parameters, qualitative and quantitative analysis of phyto- and zoo-planktons. Fishing gears and crafts. Management of a typical fish farm.

Normal anatomy and histology of finfish and shellfish. Ante-mortem and post-mortem examination of fish. Haematology. Histopathology of important viral, bacterial, fungal and parasitic diseases. Visit to organized fishery.

(To be taught jointly with Departments of Livestock Production Management and Veterinary Medicine)

REFERENCE BOOKS

1. Veterinary Pathology (199) Jones, Hunt, King William & Wilkins
2. Pathologic Basis of Veterinary Disease 4th Ed. (2007) M. McGavin, and James Zachary Mosby Press, 2006. ISBN: 0323028705
3. Veterinary Pathology 6th Ed. (2003). Ganti Sastri and Rama Pao. CB Publishers, New Delhi
4. Textbook of Veterinary General Pathology 2nd Ed. (2007. J. L. Vegad, I.B. D.C, Lucknow
5. Thomsons' Special Veterinary Pathology (2005. Carlton, McGavin and Zachary. Mosby Publications
6. Textbook of Special Veterinary Pathology-Infectious Diseases of Livestock and Poultry. J.L. Vegad. IBDC publishers
7. Veterinary Pathology in the Tropics- For Students & Practitioners (2000). Gerald Munene Mugeru. New Age International (P) Ltd, New Delhi.
8. Necropsy: Simplified procedures and Basic diagnostic methods for practicing veterinarians. Strafuss, A.C and Charles C. Thomas Springfield
9. Schalm's Veterinary Hematology, 5th Edn. (2000). Feldman, Zinkl and Jain. Lei Febiger
10. Veterinary Clinical Laboratory Procedures (1996). Sirois, Margi ,McBride, Douglas F. C.V. Mosby, USA
11. Color Atlas of Veterinary Pathology (2006). Jaap Van Dijk, Erik Gruys, Johan Mouwen,ISBN-13: 978-0-7020-2758-1 Saunders
12. Pathology of Laboratory Rodents and Rabbits 2nd Ed (2001. Dean Percy and Stephen Barthold. ISBN: 0-8138-2551-2, Blackwell