AVICENNA
DENTAL COLLEGE

Study Guide
OF GENERAL PATHOLOGY

For BDS 2nd Year

MESSAGE FROM THE PRINCIPAL

AVICENNA DENTAL COLLEGE

Prof.Dr.Sohail Abbas Khan

{MDS, Dip Op (Hons) BDS}

It is a matter of immense honour and privilege as the first Principal of Avicenna Dental College to welcome you to prospectively one of the finest dental institutes in the private sector of Pakistan. Avicenna Dental College is a private dental college, which aims to provide the finest dental education to dental undergraduate student in accordance with the latest trends in Medical Education, and to develop them to practice dentistry in the 21stcentury.

While educating dental students to become licensed, empathetic and competent professionals, Avicenna Dental College endeavours to educate students in a supportive environment in which they provide dental care for a diverse populace. In the times to come, we wish to transform our graduates into unfeigned teachers, researchers and consultants by starting post-graduation programs as well.

Avicenna Dental College aims to achieve an enterprising curriculum integrating the basic sciences with clinical experience while utilizing modern technological modalities.

In addition to the production of outstanding oral health professionals, we at Avicenna Dental College recognize our responsibility as a private dental institution to the citizens of the country in making the provision of oral the provision of oral health care available to those who are deprived of ready access.

I feel proud to lead this dental establishment such an inspiring time and hope all of you at Avicenna Dental College will share this pride and play your respective roles in materializing the dream of making this institution the premier dental educator in Pakistan.

MESSAGE FROM HOD, GENERAL PATHOLOGY

AVICENNA DENTAL COLLEGE

DR. SYED SHAUKAT ALI SHAH

M.B.B.S.,M.C.P.S.,M.PHIL(MORBID ANATOMY/HISTOPATHOLOGY)

Pathology is a branch of medicine that bridges the clinical and non-clinical subjects. Pathologists are called upon to diagnose and confirm many ailments. The department has 3 labs; a Histopathology and Haematology lab, a Microbiology and Chemical pathology lab & a Clinical lab. The Clinical lab works in full coordination with the Avicenna Hospital. The labs are being supervised by professors, experienced in the related specialties. The department has a well-designed museum displaying neatly mounted specimens and several detailed and highly informative charts/ graphs. Highly qualified professors with national & international experience are supervising the pathology labs

STUDY GUIDE OF GENERAL PATHOLOGY

Genera Pathology:

THEME : CELLULAR RESPONSES TO STRESS and TOXIC INSULTS: ADAPTATION, INJURY AND DEATH

SUB THEME: Cellular Adaptation

1. Define with examples
    a. Hyperplasia
    b. Hypertrophy
    c. Atrophy
    d. Metaplasia
2. Describe the mechanism of above adaptations.

SUB THEME: Cell injury

3. Define cell injury. Enlist causes of cell injury.
4. Differentiate between reversible and irreversible injury.
5. Describe morphological alterations in cell injury.
6. Describe mechanisms of cell injury and its clinicopathological correlations.

SUB THEME: Necrosis, Apoptosis & Necroptosis.

7. Define Necrosis and brief discussion of caseous, liquefactive, coagulative and gangrenous necrosis.
8. Define apoptosis and name its pathways.
9. Differentiate between necrosis and apoptosis.
10. Describe the mechanism of apoptosis.
11. Define necroptosis and its mechanism.

SUB THEME: Autophagy

12. Define autophagy with examples
13. Describe its steps

SUB THEME: Intracellular Accumulations & Pigmentations

14. Name the types of accumulations in cells with examples.
15. Define pigmentation and its types along with examples.
16. Differentiate between exogenous and endogenous pigmentation.

SUB THEME: Calcification

17. Define calcification
18. Name the types along with examples of types of calcification.

19. Differentiate between metastatic and dystrophic calcification. SUB THEME: Aging
20. Define aging.
21. Name mechanisms of aging.

THEME : INFLAMMATION AND REPAIR

SUB THEME: Acute Inflammation

At the end of the session, students will be able to:

1. Define acute inflammation and discuss briefly its vascular events and cellular events and enlist the chemical

mediators of acute inflammation.

2. Describe morphological patterns and outcomes of acute inflammation. **SUB THEME: Chronic Inflammation**

3. Define granulomatous and non-granulomatous chronic inflammation with examples.
4. Describe morphological features of chronic inflammation
5. Describe the cells and mediators of chronic inflammation.
6. Tabulate the causes of granulomatous inflammation.
7. Describe the role of macrophages in inflammation & repair
8. Enlist systemic effects of inflammation.

SUB THEME: Tissue Repair

9. Define repair, regeneration and scar formation.
10. Enumerate the types of cells involved in regeneration according to their proliferative capacity.
11. Describe the mechanism of tissue regeneration with example of liver.
12. Enlist the steps of scar formation alongwith its main components and growth factors involved.
13. Describe the factors affecting wound healing.
14. Define healing by primary and secondary intention.
15. Differentiate between primary and secondary healing.
16. Enlist pathological aspects of repair.

THEME : HEMODYNAMIC DISORDERS, THROMBOEMBOLIC DISEASES, AND SHOCK

SUB THEME: Edema and Effusion

At the end of the session, students will be able to:

1. Define edema and tabulate pathophysiological categories of edema
2. Illustrate with diagram mechanism of systemic edema in heart failure.

SUB THEME: Hyperemia & congestion

3. Define hyperemia and congestion and differentiate between the two.

SUB THEME: Hemostasis, hemorrhagic disorders and thrombosis

4. Define thrombosis and Virchow's triad.
5. Tabulate primary and secondary hypercoagulable states.
6. Describe morphology of arterial and venous thrombi and differentiate between two
7. Differentiate between antemortem and postmortem clot.
8. Enlist the fate of thrombus.

SUB THEME: Embolism

9. Define embolism and briefly describe its types alonwith mechanisms.

SUB THEME: Infarction

10. Define infarction.
11. Describe the morphology of red and white infarct
12. Enumerate the factors that influence the development of an infarct

SUB THEME: Shock

13. Define shock and briefly describe three types.
14. Illustrate with the help of diagram the pathogenesis of septic shock
15. Give a brief account of stages of shock.

THEME : GENETIC DISORDERS

At the end of the session, students will be able to:

1. Define mutation
2. Describe the features and examples of the following
    - Autosomal dominant disorders
    - Autosomal recessive disorders
    - X-linked disorders
3. Give brief account of
    - Marfan syndrome
    - Ehlers-Danlos syndrome
    - Down syndrome
    - Klinefelter syndrome
    - Turner syndrome
4. Give brief account of steps of PCR.

THEME : DISEASES OF IMMUNE SYSTEM

SUB THEME: The normal immune response

At the end of the session, students will be able to:

1. Define innate and adaptive immunity along with their features

2. Describe MHC

SUB THEME: Hypersensitivity

3. Define and briefly describe the four types of hypersensitivity reactions along with examples

SUB THEME: Autoimmune diseases

1. Define autoimmunity and give its examples
2. Briefly describe immunologica tolerance
3. Briefly describe HIV and Amyloidosis

THEME : NEOPLASIA

At the end of the session, students will be able to:

1. Define the following with examples
   Neoplasia
   Oncogenes
   Proto-oncogenes
   Oncoproteins
2. Give an account of nomenclature of benign and malignant tumors.
3. Enlist the pathways of spread of tumor.
4. Tabulate the differences between benign and malignant tumors with examples.
5. Tabulate the differences between carcinoma and sarcoma.
6. Enlist cellular and molecular hall marks of cancer.
7. Describe tumor suppressor genes and their examples
2. Define chemical carcinogenesis along with examples and enlist steps involved
3. Define microbial carcinogenesis along with examples.
4. Define and give examples of paraneoplastic syndromes
5. Define grading and staging of cancer and differentiate between two
6. Describe laboratory diagnosis of cancer
7. Define tumor markers along with examples