

BMS291 Pathophysiology and Pharmacology 1 Notes:-

Contents:

Topic 1 – General Principles

Topic 2 – Cellular responses to stress, injury and ageing

Topic 3 – Fluid Balance and Oedema

Topic 4 – Infectious Diseases

Topic 5 – Pain and Analgesia

Topic 6 – Inflammation and Wound Healing

Topic 7 – Neoplasia

Topic 8 – Musculoskeletal System

Topic 9 – Cardiovascular Dysfunction

Topic 10 – Respiratory Dysfunction

Topic 1 – General Principles

Pathophysiology is:

- the physiology of altered health states
- disease is the collective term given to the characteristic collective effect of related pathophysiological changes
- disorders are disturbances in normal physiological function

Aetiology → the cause for the disease

- Biological (e.g. bacteria, viruses)
- Chemical (e.g. poisons)
- Nutritional (e.g. excess or deficit in diet)
- Physical (e.g. trauma, burns)
- Genetic

Aetiology also includes *how* a diseased state occurred

- Nosocomial aetiology → disease arises due to exposure to hospital or clinical care
 - e.g. MRSA infection from surgical instrument
- Iatrogenic aetiology → disease caused inadvertently by activity of a clinical practitioner
 - e.g. reaction to a drug
- Idiopathic aetiology → disease has an unknown cause

Pathogenesis is the process of the disease, from initial exposure to the cause to the full recovery (or complete non-recovery)

- includes bodily processes that do not cause abnormal physiology, but are required for disease progression

Clinical manifestations

- signs are changes that can be measured by an observer e.g. Blood pressure, temperature → objective
- symptoms are changes reported by the patient → subjective

Other terms:

- Syndrome – a collection of signs and symptoms that occur together e.g. chronic fatigue syndrome
- Complications – possible extensions of a disease or the result of treatment for the disease
- Sequelae – lesions or impairments that remain after the disease is gone
- Morphology – structures of cells and tissues
 - alterations may occur as a result of disease
 - study of cell structure at a microscopic level is known as histology
- Diagnosis – a conclusion reached after assessing the signs and symptoms, and interpreting the results of diagnostic tests e.g. imaging, blood tests, biopsy
 - response to treatments may also be used as part of a diagnosis

Clinical course

- Acute – sudden onset but short term
- Chronic – slowly developing and longer lasting disease, often relapsing
- Pre-clinical or prodromal period – disease is present but no specific symptoms yet (some symptoms such as fever or pain may be present)
- Sub-clinical – disease present but no symptoms present

Epidemiology

- study of disease within populations
 - occurrence, determinants, distribution, and control of the disease
- Sporadic disease – disease occurs at irregular intervals
- Endemic disease – disease is always present in a population but at low levels
- Hyperendemic disease – in increased level of endemic disease
- Pandemic disease – sudden increase over a wide area or globally
- Outbreak – sudden, unexpected occurrence of a disease, usually in a specific area
- Index case – the first case in an outbreak (patient 0)

Measuring the occurrence of a disease:

- Morbidity rate is the number of cases in a specified period compared to the number of potential cases
- Mortality rate is the number of deaths as a result of disease compared to the number of individuals with the disease
- Prevalence is the percentage of people in the population with the disease at any given time

General concepts in pharmacology

- Drug – chemical that acts on a living process