2012/13 BATCH

INTEGRATED HUMAN BIOLOGY MODULE (Year 2 Semester II)

THE ANATOMICAL AND PHYSIOLOGICAL BASIS OF DISEASES AND THEIR PATHOGENESIS

Further to the course syllabus of med 2213 (Integrated Human Biology Module) the attention of the students is drawn to the diseases encountered in primary care practice that provide 'special' learning opportunities in terms of revising essential elements of the basic sciences and pathogenesis. This list is not comprehensive in terms of 'covering a surgical/medical syllabus'. What we hope instead, is that opportunities will arise for vertical inter-disciplinary integration, providing memorable associations that will enhance core knowledge in the basic sciences as well as provide valuable insights into surgical diagnosis and management.

Wherever possible, repetition of core concepts is avoided.

HEAD AND NECK

1. INTRACRANIAL HAEMORRHAGE
    a. ANATOMY arteries, dural venous sinuses, bridging veins, coverings of the brain
    b. PHYSIOLOGY cerebral perfusion pressure, Cushing reflex, focal neurological signs
    c. PATHOLOGY EDH, SDH, SAH, ICH

2. INTRACRANIAL TUMOURS
    a. ANATOMY brain regions, sensory and motor homunculi, Broca's, Wernicke's
    b. PHYSIOLOGY focal neurological signs, seizures, intracranial pressure dynamics
    c. PATHOLOGY pathology of tumours, increased intracranial pressure

3. FRACTURE OF THE BASE OF THE SKULL
    a. ANATOMY cranial fossae and relations, basal foramina
    b. PHYSIOLOGY CSF circulation, pressure
    c. PATHOLOGY CSF rhinorrhoea

4. PITUITARY MASS
    a. ANATOMY pituitary fossa, cavernous sinus, optic chiasma
    b. PHYSIOLOGY pituitary hormones and their actions
    c. PATHOLOGY dyshormonogenesis, mass effects, bitemporal hemianopia

5. INFLAMMATION OF THE MASTOID SINUS
    a. ANATOMY anatomy of the middle ear and mastoid sinus
    b. PHYSIOLOGY function of the middle ear, hearing
    c. PATHOLOGY infection in the mastoid sinus and sequelae

6. INJURY TO THE FACIAL NERVE
    a. ANATOMY facial nerve pathway (origin, course and distribution)
    b. PHYSIOLOGY facial nerve function
    c. PATHOLOGY causes and effects of facial nerve palsy

7. PAROTID TUMOURS
    a. ANATOMY anatomy, embryological extensions of the parotid gland, vessels
    b. PHYSIOLOGY salivation including innervation
    c. PATHOLOGY benign and malignant neoplasia, complications, Frey syndrome

8. SUBMANDIBULAR SALIVARY CALCULI
    a. ANATOMY anatomy, relations, vessels, duct
    b. PHYSIOLOGY innervation of the submandibular gland
    c. PATHOLOGY tumour pathology, calculi formation, chronic inflammation

9. FACIAL INJURIES
    a. ANATOMY skeletal anatomy of face and mandible, innervation, blood supply
    b. PHYSIOLOGY function of the facial muscles and nerves
    c. PATHOLOGY Le Fort fractures

10. FACIAL INFECTIONS
    a. ANATOMY soft tissue spaces of the face and neck
    b. PHYSIOLOGY effects of local inflammation and the systemic response
    c. PATHOLOGY inflammation, necrosis, suppuration, abscess formation

11. ACUTE PAINFUL RED EYE
    a. ANATOMY anatomy of the globe, sclera, cornea, conjunctiva, iris
    b. PHYSIOLOGY function of the retina, lens and accommodation, iris, lacrimation
    c. PATHOLOGY hyperaemia, congestion, corneal ulceration

12. STRABISMUS/OPHTHALMOPEGIA
    a. ANATOMY anatomy of the extra-ocular muscles, 3, 4, 6^{th} cranial nerves
    b. PHYSIOLOGY accommodation, convergence, eye movements
    c. PATHOLOGY

13. CARCNOMA OF THE ORAL CAVITY
    a. ANATOMY lips, sulci, alveolus, tongue, lymphatics
    b. PHYSIOLOGY salivation, mastication, oral/lingual sensations and innervation
    c. PATHOLOGY squamous cell, adenocarcinoma, melanoma

14. INFLAMMATION AND NEOPLASIA OF THE TONSILS
    a. ANATOMY tonsillar fossae, Waldeyer's ring, blood supply, lymphatics
    b. PHYSIOLOGY immunology and function of the non-encapsulated lymphoid organs
    c. PATHOLOGY neoplasia, lymphatic spread, tissue response to radiotherapy

15. HOARSENESS OF VOICE
    a. ANATOMY anatomy of the larynx and vocal cords
    b. PHYSIOLOGY innervation, function, swallowing, phonation
    c. PATHOLOGY neural damage, neoplasia of the larynx, thyroid surgery

16. PHARYNGEAL DYSPHAGIA
    a. ANATOMY anatomy of the pharynx, Killian's dehiscence, radiological anatomy
    b. PHYSIOLOGY swallowing reflex, innervation of the pharynx
    c. PATHOLOGY dysphagia causes, bulbar/pseudobulbar palsy, tumours

17. VIRCHOW NODE
    a. ANATOMY posterior triangle of the neck, lymph node regions
    b. PHYSIOLOGY lymphatic drainage of the head, thorax and neck
    c. PATHOLOGY CUP, SCC, AdenoCA, lymphoma, melanoma, FNAC
18. CERVICAL LYMPHADENOPATHY
    a. ANATOMY lymph node groups, regions of drainage
    b. PHYSIOLOGY physiology of lymph flow
    c. PATHOLOGY causes of lymph node enlargement

19. MIDLINE NECK LUMP
    a. ANATOMY structures of the midline of the neck, embryology
    b. PHYSIOLOGY
    c. PATHOLOGY pathology of ranula, laryngocele, thyroglossal cyst

20. SOLITARY NODULE OF THE THYROID
    a. ANATOMY anatomy of the thyroid
    b. PHYSIOLOGY physiology of thyroid function
    c. PATHOLOGY pathology of the solitary nodule

21. PARATHYROID ADENOMA
    a. ANATOMY anatomy and embryology of the thyroid
    b. PHYSIOLOGY parathyroid physiology, calcium metabolism
    c. PATHOLOGY hyper and hypocalcaemia, hypo and hyperparathyroidism

22. CERVICAL SPINE INJURY
    a. ANATOMY gross and radiological anatomy of the cervical spine, cord, tracts
    b. PHYSIOLOGY function of the spinal cord, nerve conduction studies
    c. PATHOLOGY cord transection, hemi-section, respiratory paralysis, effects

UPPER LIMB

23. DISLOCATION OF THE SHOULDER
    a. ANATOMY anatomy and stabilising factors of the shoulder
    b. PHYSIOLOGY forces acting on a dislocated shoulder, muscle relaxants
    c. PATHOLOGY joint laxity, Marfan's, Ehler Danlos,

24. SATURDAY NIGHT PALSY
    a. ANATOMY brachial plexus anatomy
    b. PHYSIOLOGY nerve conduction
    c. PATHOLOGY neurapraxia, axonotmesis and neurotmesis

25. CERVICAL RIB
    a. ANATOMY anatomy of the thoracic inlet, 1st rib and subclavian vessels
    b. PHYSIOLOGY physiology of blood flow
    c. PATHOLOGY thrombo-embolism, ischaemia, nerve conduction defects

26. SUPRACONDYLAR FRACTURE OF THE HUMERUS
    a. ANATOMY anatomy of the elbow, cubital fossa, median nerve, brachial artery
    b. PHYSIOLOGY
    c. PATHOLOGY intimal contusion, thrombosis, ischaemia

27. ULNAR CLAW HAND
    a. ANATOMY origin course and distribution of the ulnar nerve
    b. PHYSIOLOGY nerve conduction physiology of the ulnar nerve
    c. PATHOLOGY claw hand, ulnar paradox, Wallerian degeneration, nerve repair

28. TENNIS ELBOW AND GOLF ELBOW
    a. ANATOMY common flexor and extensor origins, anatomy of the enthesis
    b. PHYSIOLOGY muscle actions, eliciting pain and weakness
    c. PATHOLOGY enthesitis/enthesopathy, healing of ligaments and tendons

29. CARPAL TUNNEL SYNDROME, LUNATE AND PERILUNATE DISLOCATION
    a. ANATOMY anatomy of the wrist, carpal tunnel and the median nerve
    b. PHYSIOLOGY nerve conduction testing
    c. PATHOLOGY neurapraxia

30. INFECTIONS OF THE HAND
    a. ANATOMY anatomy of the spaces of the hand, flexor sheath, etc.
    b. PHYSIOLOGY
    c. PATHOLOGY inflammation, suppuration, tracking of infections

31. FIGHT BITE AND BOXER'S FRACTURE
    a. ANATOMY anatomy of the metacarpo-phalangeal joint, extensor expansion
    b. PHYSIOLOGY tendon sheaths, excursion, lubrication
    c. PATHOLOGY infections of the extensor tendon sheath, joint sepsis

32. SCAPHOID FRACTURE
    a. ANATOMY anatomy of the snuff box, scaphoid
    b. PHYSIOLOGY nutritional supply of bone, Haversian systems
    c. PATHOLOGY avascular necrosis of bone, trophic changes, secondary osteoarthrits

THORAX

33. PENETRATING INJURY TO THE SUPERIOR MEDIASTINUM
    a. ANATOMY anatomy of the superior mediastinum, great vessels, nerves, airways
    b. PHYSIOLOGY
    c. PATHOLOGY acute wounds, coagulation, healing by repair, mediastinal infection

34. HAEMOTHROAX NOTED AFTER INSERTION OF AN IC TUBE
    a. ANATOMY anatomy of the intercostal space, lungs and pleurae, 'safe' triangle
    b. PHYSIOLOGY breathing, negative intra-thoracic pressure, intercostal drainage
    c. PATHOLOGY causes and effects of hemothorax, haemorrhage and shock

35. PERICARDIAL TAMPONADE AND NEEDLE PERICARDIOCENTESIS
    a. ANATOMY Anatomy of the pericardium, echocardiographic anatomy
    b. PHYSIOLOGY A/V pressures, cardiac output, JVP
    c. PATHOLOGY Beck's triad, ECG changes, principles of drainage

36. ACHALASIA OF CARDIA
    a. ANATOMY oesophagus, myenteric plexus, radiological anatomy, Sx access
    b. PHYSIOLOGY innervation of the upper gut, VIP, NO, peristalsis
    c. PATHOLOGY effects: proximal dilatation, basis and effects of myotomy

37. GASTRO-OESOPHAGIAL REFLUX DISEASE
    a. ANATOMY anatomy of the gastro-oesophageal junction
    b. PHYSIOLOGY factors maintaining gastro-oesophageal continence
    c. PATHOLOGY causes and effects of GORD, Barret's, oesophagitis, etc.

38. BLEEDING OESOPHAGEAL VARICES
    a. ANATOMY anatomy of the porto-systemic anastomoses
    b. PHYSIOLOGY haemostasis and coagulation, vasopressin, tranexamic acid
    c. PATHOLOGY formation of varices, causes and effects of portal hypertension

ABDOMEN

39. GASTRIC VOLVULUS (ORGANO-AXIAL AND MESENTERICO-AXIAL)
    a. ANATOMY anatomy of the stomach
    b. PHYSIOLOGY physiology of gastric contraction and secretion
    c. PATHOLOGY causes and effects of volvulus

40. GASTRIC CANCER
    a. ANATOMY gastric lymph node stations
    b. PHYSIOLOGY
    c. PATHOLOGY pathology of gastric cancer and its spread

41. PEPTIC ULCER
    a. ANATOMY anatomy of the gastric and duodenal mucosa
    b. PHYSIOLOGY acid and mucus secretion, gastric motility and emptying
    c. PATHOLOGY Helicobacter pylori, mucosal ischaemia, gastric atrophy

42. PYLORIC STENOSIS
    a. ANATOMY anatomy of the antro-pyloro duodenal complex
    b. PHYSIOLOGY gastric emptying, electrolyte imbalances of GOO
    c. PATHOLOGY hypertrophy, myotomy, pyloro-duodenal reflux

43. PANCREATIC PSEUDOCYST
    a. ANATOMY anatomy of the lesser sac and gastric bed
    b. PHYSIOLOGY effects of enzyme extravasation, saponification, hypocalcaemia
    c. PATHOLOGY cysts and pseudocysts, assessment and treatment

44. MECKEL'S DIVERTICULITIS
    a. ANATOMY anatomy and arterial supply, embryology of the midgut
    b. PHYSIOLOGY small intestinal physiology, motility and secretion
    c. PATHOLOGY metaplasia, infection, ulceration

45. ACUTE APPENDICITIS AND APPENDICUAR MASS
    a. ANATOMY anatomy of the vermiform appendix
    b. PHYSIOLOGY function of the appendix, greater omentum
    c. PATHOLOGY causes, sequelae and complications of acute appendicitis

46. GALLSTONES AND ACUTE CHOLECYSTITIS
    a. ANATOMY anatomy of the gallbladder, biliary tract (ERCP, CT, MRCP)
    b. PHYSIOLOGY physiology of bile production and secretion
    c. PATHOLOGY formation of gallstones

47. CANCER OF THE HEAD OF THE PANCREAS
    a. ANATOMY hepatobiliary anatomy, pancreatic anatomy (+radiology)
    b. PHYSIOLOGY
    c. PATHOLOGY pathology of pancreatic tumours, effects of obstructive jaundice

48. HAEMATURIA AND FLANK PAIN
    a. ANATOMY gross, radiological and endoscopic anatomy of the urinary tract
    b. PHYSIOLOGY renal and ureteric pain pathways, renal metabolic derangements
    c. PATHOLOGY pathology of renal tumours, renal calculi

49. STAGHORN CALCULUS OF THE KIDNEY
    a. ANATOMY anatomy of the kidney including surgical access, Gilvernet plane
    b. PHYSIOLOGY glomerular function, excretion of xenobiotics
    c. PATHOLOGY obstructive nephropathy, calculi formation

50. COLONIC CANCERS
    a. ANATOMY anatomy, endoscopy, blood supply, lymphatic and venous drainage
    b. PHYSIOLOGY function of the colon, motility studies, transit studies
    c. PATHOLOGY pathology of colonic tumours

51. INTESTINAL OBSTRUCTION
    a. ANATOMY gross, radiological, endoscopic, laparoscopic anatomy of the gut
    b. PHYSIOLOGY gut secretion and motility, vomiting reflex, reverse peristalsis
    c. PATHOLOGY fluid loss into the gut and metabolic derangements, causes, effects

52. ABDOMINAL COMPARTMENT SYNDROME
    a. ANATOMY anatomy of the abdominal walls, endoscopic anatomy
    b. PHYSIOLOGY abdominal pressure, bladder pressure measurement
    c. PATHOLOGY causes and effects of abdominal compartment syndrome

53. RECTAL MASS
    a. ANATOMY anatomy, radiology of the rectum, relations, blood supply, etc.
    b. PHYSIOLOGY rectal manometry, innervation
    c. PATHOLOGY tumours, infections, infestations, ulcers

54. HAEMORRHOIDS, PERIANAL SEPISIS (ABSCESS, FISTULA)
    a. ANATOMY 3D anorectal anatomy, radiology, endoscopic anatomy
    b. PHYSIOLOGY sphincter function, continence, innervation
    c. PATHOLOGY haemorrhoids, suppuration and spread of infection, fistula, sinus

55. TRAUMATIC BLADDER RUPTURE
    a. ANATOMY gross, radiological and endoscopic anatomy, innervation
    b. PHYSIOLOGY bladder pressures, manometry, flow volume studies
    c. PATHOLOGY effects of urinoma/extravasation/reabsorption

56. ADNEXAL MASS
    a. ANATOMY gross, radiological, laparoscopic anatomy of the uterus and adnexa
    b. PHYSIOLOGY pain pathways of the pelvic organs, menstrual cycle
    c. PATHOLOGY pathology of pelvic tumours

57. BLADDER OUTFLOW OBSTRUCTION
    a. ANATOMY anatomy of the urethra, urethroscopy, imaging
    b. PHYSIOLOGY sphincter and bladder innervation
    c. PATHOLOGY strictures of the urethra, causes (trauma, infection, etc)

58. INGUINAL AND FEMORAL HERNIA
    a. ANATOMY gross, surface and endoscopic anatomy
    b. PHYSIOLOGY dynamics of intra-abdominal pressure, shutter mechanism
    c. PATHOLOGY obstruction, ischaemia, strangulation

59. ACUTE SCROTUM
    a. ANATOMY anatomy of the testes, epididymis, vas, spermatic cord
    b. PHYSIOLOGY spermatogenesis, hormones and their effects, fertility
    c. PATHOLOGY causes (infection, TB, STD, trauma, torsion, infection), effects

60. LOWER BACK PAIN, CAUDA EQUINA SYNDROME
    a. ANATOMY gross and radiological anatomy, cauda equina
    b. PHYSIOLOGY function of the cauda equina, bladder and bowel control
    c. PATHOLOGY bladder, bowel dysfunction and effects, long tract effects

LOWER LIMB

61. ACUTE LOWER LIMB ISCHAEMIA
    a. ANATOMY anatomy of the vascular tree, radiology
    b. PHYSIOLOGY vascular spasm, flow dynamics, coagulation, nitrous oxide
    c. PATHOLOGY ischaemia, thrombosis, embolism, reperfusion injury

62. VARICOSE ULCER
    a. ANATOMY anatomy and radiology of the lower limb superficial veins
    b. PHYSIOLOGY venous drainage, flow dynamics, calf pump, venous pressures
    c. PATHOLOGY valvular incompetence, reflux, causes and effects

63. LYMPHOEDEMA/ELEPHANTIASIS
    a. ANATOMY anatomy, radiology, scintigraphy, nodal architecture
    b. PHYSIOLOGY oedema, lymphatic physiology, function of lymph nodes
    c. PATHOLOGY causes, effects, dystrophy and trophic changes

64. PENETRATING INJURY TO THE GROIN
    a. ANATOMY anatomy of the femoral triangle, artery, nerve
    b. PHYSIOLOGY functional physiology of the femoral nerve
    c. PATHOLOGY ischaemia, haemorrhage

65. LONG BONE FRACTURE
    a. ANATOMY gross and radiological anatomy of the femur, tibia, fibula
    b. PHYSIOLOGY ossification, fracture union, direct osteonal growth, callus
    c. PATHOLOGY fracture healing, crush syndrome, fat embolism syndrome

66. COMPARTMENT SYNDROME OF THE LEG
    a. ANATOMY anatomy of the lower limb fascial compartments
    b. PHYSIOLOGY capillary perfusion physiology, pressure manometry
    c. PATHOLOGY ischemia, reperfusion

67. LIGAMENTOUS INJURY OF THE KNEE
    a. ANATOMY gross and radiological anatomy, arthroscopic anatomy
    b. PHYSIOLOGY basic biomechanics, force distribution, sports physiology
    c. PATHOLOGY infection, trauma, ligament healing

68. INJURY TO THE ANKLE
    a. ANATOMY gross and radiological anatomy, arthroscopic anatomy
    b. PHYSIOLOGY basic biomechanics, force distribution, sports physiology
    c. PATHOLOGY infection, trauma, ligament healing

69. INFECTION/INJURY OF THE FOREFOOT
    a. ANATOMY anatomy of the foot, layers of the plantar aspect, arches
    b. PHYSIOLOGY biomechanics, walking, maintenance of the arches
    c. PATHOLOGY tissue space, web, lumbrical canal infections, tracking

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Integrated Human Biology Module (Y2S2)

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