OMFS Survival Guide – MRCS

Pathology

* Inflammation
	+ Sinus = blind ending tract
	+ Complement is part of innate immune system
	+ Mediators

* + - IL1 – neutrophil adhesion
		- Il2 – differentiation of B cells and NK cells
		- Histamine – increased capillary permeability
		- Interferon – activate macrophages and NK cells
		- TNF – fever, neutrophil adhesion
		- IL8 attracts neutrophils
* Cell Injury
	+ Mitochondria can self replicate
	+ Ageing cells = lipofuscin
* Wounds
	+ Woven bone replaced by lamellar bone
* Vascular
	+ Central line insertion
		- Immediate complications – pneumothorax, haemothorax, embolism, haematoma, chylothorax, tamponade, arrhythmias

* + Ulcers
		- Arterial – punched out, poor cap refill, absent pulses, painful
		- Diabetic – pressure areas, painless
	+ Ascites
		- Transudate – LOW protein – failure
		- Exudate - HIGH protein – infection
* Growth
	+ Cornea lined with stratified squamous epithelium
	+ Dysplasia can be reversed if caught early
	+ Metaplasia = reversible transformation of cells from one type to another
	+ Hyperplasia/hypertrophy can be reversed when stimulus removed
	+ Gangrene
		- Wet – arterial and venous obstruction

* + - Gas – c. perfringens
		- Dry – slow putrefactive process
	+ Genetics
		- Wilsons disease – chromosome 13
		- Haemochromatosis – chromosome 6
		- A1 antitrypsin is autosomal recessive
	+ Apoptosis – cell membrane integrity is preserved, no inflammatory response
		- Can be morphogenetic
* Cancer
	+ Rhabdomyosarcoma = skeletal muscle neoplasm
	+ Oesophageal/stomach cancer – nitrosamine
	+ Adenomas can become malignant (adenocarcinoma)
	+ Colon cancer – linked to low vit c diet and low fibre intake
	+ Osteosarcoma most common bone primary
	+ Gastric cancer – link to blood group A
	+ Auer rods = AML
* Immunology
	+ Virus infected cells killed by NK cells
	+ Complement
		- Classical – antigen to C1/2/4 🡪 C4b2a 🡪 C3 a and b 🡪 anaphylaxis/c5 convertase
		- Alternative – endotoxin cleaves C3 🡪 c3 a and b 🡪 c5 convertase
		- Final common – c5 convertase 🡪 c5a (anaphylaxis), c5b (MAC)
* Haematology
	+ Warfarin can’t be used in later stages of pregnancy
	+ Most common cause of thrombosis is atherosclerosis
	+ ITP – low platelets, autoantibodies to platelets, megakaryocytes, bruises
	+ B12 deficiency can cause de-myelination of posterior and lateral columns of spinal cord
	+ Protein c degrades factor 5a and 8a
	+ Iron deficiency anaemia
		- Target cells and pencil cells
		- Low ferritin, high transferrin
	+ Sickle cell = mutation of beta haemoglobin chain
	+ Shelf life of platelets is 5 days
* Microbiology
	+ Clostridium = gram positive rods

Pathology Key Revision Points

* Sarcomas
	+ 40% in extremities
	+ Mesenchymal
		- Bone or soft tissue
	+ IM location, rapid growth, painful
	+ Ezamples
		- Ewings – males, teenagers, femoral diaphysis, blood mets and tx = chemo = surgery
		- Osteosarcoma – osteoblastic differentiation, tx = chemo + surgery
* Thyroid tumours
	+ Solitary nodules – do FNA first line
	+ Follicular
		- Discrete nodule
		- Cant be diagnosed via FNA so all THY 3f will require at least hemi thyroidectomy
		- berrys sign (absence of carotid pulse due to malignant thyromegaly)
		- metastasise away from thyroid (ie skull) – spread via blood
	+ Papillary
		- Commonest
		- Diagnosed on FNA
		- Psammoma bodies (organ Annie nuclei)
		- Mets confined to neck (spread via lymph)
	+ Anaplastic
		- Elderly females
		- Mostly palliative management as present late
	+ Medullary
		- Parafollicular cells (c cells) and neural crest origin
		- High calcitonin levels (used for monitoring)
		- Linked to MEN 2A
		- Don’t respond to radioiodine
	+ Lymphoma
		- Respond well to radiotherapy
* Mesenteric infarcts
	+ 50% linked to acute emboli affecting SMA (due to AF or post-MI)
	+ Likely at splenic flexure (territory supplied by both SMA and IMA)
	+ Presentations
		- Acute emboli – sudden onset pain and diarrhoea, clinical deterioration
		- Acute on chronic – longer history, post-prandial abdo pain and weight loss
		- Vein thrombosis – weeks history, signs will not present until vein thrombosis impacts arterial flow
		- Linked to thrombophilia
	+ Ix – CT angiography
	+ Tx
		- periotnism = laparotomy
		- vein thrombosis – IV heparin
* TB
	+ Ghon complex = lung lesion and lymph nodes
	+ Forms granuloma (collection of histiocytes)
	+ **Caseous** necrosis in the centre
	+ Type 4 hypersensitivity
* Arterial occlusions
	+ Embolus - sudden
	+ Thrombosis - cladication
	+ Vasospasm – extremities, Raynauds, temperature related
	+ Steal syndrome – secondary to AV fistula or cervical rib
	+ Vasculitis
		- Aorta – Takayasus/buergers/temporal arteritis
		- Large arteries – buergers/temporal arteritis/polyateritis nodosa
		- Medium arteries – polyarteritis nodosa/wegeners granulomatosis
		- Small arteries – wegners granulomatosis/rheumatoid vasculitis
	+ Specifics
		- Takyasu’s = upper limb claudication, diminished pulses, ESR high
		- Buergers = thrombotic occlusions, young male smokers, pedal pulses lost, corkscrew collateral vessels
		- GCA = granulaomatous lesions on biopsy however biopsy may be normal
* Oesophageal Cancer
	+ Adenocarcinoma – lower part of oesophagus
		- GORD history/barrets oesophagus
	+ SCC – upper part of oesophagus
		- Tx = chemoradiotherapy
* Haematuria
	+ Causes
		- Trauma
		- Infection
		- Malignancy – renal cell carcinoma, TCC of bladder, wilms tumour (children), prostate cancer, penile cancer
			* Transitional cell carcinoma = arise from urothelium
		- Renal disease – glomerulonephritis
		- Stones
		- Drugs – cause tubular necrosis/nephritis
* Pagets diease of breast
	+ Rash affects nipple first then spreads to areolar area
	+ Diagnosed via punch biopsy
* Breast cancer
	+ Nottingham Prognostic Index – (tumour size x 0.2) + lymph node score + grade score
	+ Tx – small breasts and big lump = mastectomy; large breasts and small lump = WLE
	+ Reconstruction uses latissimus dorsi flap and sub-pectoral implants (prosthesis/TRAM/DIEP flaps)
* Parathyroid
	+ Primary hyperparathyroidism and renal stones = indication for parathyroidectomy
	+ Types
		- Primary = high PTH, calcium; low phosphate
			* Surgery if poor renal function, neuromuscular symptoms, renal stones, T score less than -2.5
		- Secondary = high PTH, phosphate; low calcium – background of chronic renal failure causing parathyroid gland hyperplasia
			* Medical therapy
		- Tertiary = high PTH, calcium, ALP; low phosphate – ongoing hyperplasia post transplant
			* Excise gland and re-implant
		- Familial – low calcium in urine
* Liver lesions
	+ Liver cell adenoma linked to COCP
	+ Haemangioma – most common benign tumour
	+ Abscess – linked to biliary sepsis
	+ Amoebic abscess – aspirates colourless fluid – give metronidazole
	+ Hyatid cyst – echinococcus infection – give mebendazole
* Cell death
	+ Necrosis – loss of perfusion 🡪 hypoxia 🡪 cellular lysis
		- Coagulative – organs
		- Colliquative – CNS
		- Caseous.- TB, eosinophils
		- Gangrene – iron sulphide (wet component is liquefactive)
		- Fibrinoid – arterioles in patients with malignant hypertension
		- Fat – trauma to fat
	+ Apoptosis – programmed cell death
* Lymphoma
	+ Hodgkins
		- classical lymphocyte predominant is best prognosis
		- Ann Arbor staging
		- Reed Sternberg cell
		- Tx = chemo and radio
		- Linked to EBV
* Jaundice
	+ USS first line
	+ CT if ?pancreatic necrosis
	+ MRCP then ERCP
* Diaphragm disease
	+ Small bowel divided into short compartments
	+ Caused by NSAIDs
* Hereditary Spherocytosis
	+ Red cell membrane – prone to destruction
	+ High bilirubin, jaundice, splenomegaly
* Carcinoid tumour
	+ Neuroendocrine tumour secreting serotonin
	+ Carcinoid syndrome only occurs in presence of liver mets as liver metabolises serotonin from primary lesion normally
	+ Blood tests – chromogranin A, NSE, substance P, gastrin
	+ Urine tests – 5 HIAA (serotonin)
	+ Tx: octreotide/excision
* Haematology
	+ Antiphospholipid syndrome = thromboembolism and bleeding in young woman
		- Low platelets, APTT prolonged
	+ DIC
		- Low platelets and high fibrin degradation products
* Genetic Disoders
	+ Colorectal
		- Lynch Syndrome (HNPCC) – colon, uterine, gastric cancer
		- FAP (APC gene) – colon, duodenal cancer
			* Gardner syndrome is FAP with desmoid tumours (myelofibroblasts) and mandibular osteomas
		- Villous polyps have greatest risk of metastatic potential
			* Moderate/high risk need regular colonoscopy
		- Peutz-Jeghers
			* Autosomal dominant
			* Harmartomatous polyps and pigmented freckles, intussusception
	+ Oesophageal
		- Choanal atresia – episodes of cyanosis worse during feeding and better on crying
* Hepatocellular carcinoma
	+ Those at risk (hepatitis, cirrhosis) should receive USS/AFP every 6-12 months
	+ Child Pugh score
		- A – resection
		- B – chemo (tyrosine kinase inhibitor SORAFENIB)
		- C – best supportive care
* Bone pathology
	+ Pain at rest, high calcium, high ALP = mets to bone
		- Requires radiotherapy
	+ Pagets disease of bone – very high ALP (normal calcium)
		- Give bisphosphonates
	+ Osteoporosis – give bisphosphonates
* Pancreatic Cancer
	+ Adenocarcinoma
	+ Trousseau’s sign – migratory superficial thrombophlebitis
	+ Tx
		- Head of pancreas – whipples
		- Body/tail – distal pancreatectomy (poor prognosis)
* Nasopharyngeal carcinoma
	+ Linked to EBV
	+ Squamous cell carcinoma
	+ Unilateral conductive hearing loss + ipsilateral face pain + ipsilateral paralysis of soft palate
	+ Tx = radiotherapy
* Actinomycosis
	+ Gram positive anaerobes
	+ Sulphur granules
	+ Tx = penicillin based antibiotics
* Fracture Complications
	+ Symptoms: resp, neuro, petechial rash
* Crohns Management
	+ Segmental small bowel resections/stricturoplasty
	+ Risk of intestinal fistulas
* Testicular Cancer
	+ Seminoma – normal AFP and HCG
	+ Teratoma – twenties, high AFP
* Phaeochromocytoma
	+ Ix – urinary VMA
	+ Tx – medically optimise (alpha blocker and beta blocker) then remove
* Definition
	+ Neuropraxia.= nerve loss which recovers
	+ Giant cell = made from macrophages
* Parotid Cancer
	+ Adenoid cystic carcinoma most likely to invade nerve
* Anal Cancer
	+ Commonly squamous cell carcinoma
* Renal Disease
	+ Poor renal function + muddy brown casts = acute tubular necrosis
		- Myoglobinuria and haemolysis cause necrosis
	+ Acute interstitial nephritis – due to drug toxicity
	+ Renal tumours
		- Renal cell carcinoma is brown
		- Transitional cell carcinoma is pink
* Aneurysm disease
	+ Loss of elastic fibres from the media
* Pagets disease of bone
	+ Primary disorder of osteoclasts followed by increased osteoblastic activity causing sclerosis
	+ Causes sensorineural hearing loss
* Ureters lined by transitional epithelium
* Meckels
	+ Usually ileal mucosa but can be lined with ectopic gastric mucosa