BIOS 2015 ... CHAPTER 9- Musculoskeletal Disorders

Page	Note
	These notes are limited to the diseases in the LOM
	Other disease processes are covered in the power point presentations.
	OSTEOPOROSIS
	There is a decrease in bone **mass** and **density**
	Two forms:
	Primary - Idiopathic - Age 50+ years - Decrease in estrogens plays a role in post-menopasusal women. - Decreased calcium intake **Secondary** - As a complication of another disorder such as chronic use of glucocorticoids.
	Happens when **bone resorption exceeds formation.** This results in **loss of compact bone.** The remaining bone is normal bone, there is just not enough of it.
	Diagnosed with bone density scans.
	Diagnosis often follows a complication, such as a fracture, as there are no specific symptoms.
	The bone loss can lead to compression fractures of vertebrae, wrist, or hip as well as kyphosis and scoliosis.
	<u>Predisposing factors</u> Age 50+ years Decreased mobility or sedentary lifestyle Hormonal factors - Excess corticosteroids or parathyroid hormone (PTH) - Deficit of estrogen or testosterone Deficits of calcium, vitamin D, or protein Cigarette smoking Lower BMI Asian or European ancestry Excessive caffeine intake
	<u>Treatment</u> Dietary supplements Weight-bearing exercise Physiotherapy to reduce pain and maintain function Bisphosphonates, inhibits osteoclasts. Calcitonin
	OSTEOMALACIA
	In children it leads to weak bones and skeletal deformaties and is known as Rickets.
	In adults it is called Osteomalacia and leads to soft bones that fracture.

	The disease is caused by a deficiency of vitamin D and phosphates, usually due to a dietary deficiency. There is an associated hypocalcemia.
	Patients complain of lower back and thigh pain that later progresses to involve the arms and ribs. The also complain of muscle weakness and fatigue.
	Due to demineralization, the bones become soft and bend producing bone deformaties that include compressed vertebrae and abnormal pelvic bones. Fractures also occur.
	A typical finding is a "waddling gait".
	Treatment is to give oral vitamin D unless there is a malabsoption problem in the gut in which case injections may be needed.
	After treatment, the bones regain strength but **retain their deformed shape.**
	RHEMATOID ARTHRITIS
	Arthritis is inflammation of a joint.
	In rheumatoid arthritis, the inflammation begins as an autoimmune synovitis.
	It affects all ages and has a higher incidence in women than men.
	The exact cause is unknown, but there appears to be a genetic factor as there is a familial predispoisition.
	Patients report having stiff joints in the morning that get better as the day progresses.
	Affected joints are painful, stiff, red and swollen, and the patient may have fatigue, anorexia, mild fever, generalized lymphadenopathy, and generalized aching.
	As the condition becommes chronic, there is cartilage erosion and fibrosis that hold the joints in a deformed state. A classic example is the hand deformity with ulnar drift of the fingers.
	Muscle atrophy and muscle spasms from inflammation also occur.
	Systemic effects include marked fatigue, depression, malaise, anorexia, low-grade fever, and iron deficiency anemia that is resisatant to iron therapy.
	Treatment Balance between rest and moderate activity Heat and cold applications Physical and occupational therapy NSAIDs Glucocorticoids for severe inflammation Analgesia for pain Disease-modifying antirheumatic drugs, such as gold salts, methotrexate, hydroxychloroquine Biological response–modifying agents, such as infliximab, rituximab, anakinra
	GOUT
	Gout is caused by deposits of uric acid and crystals in the joint causing inflammation.
	Patients typically report joint pain that evolves over a 2-4 hour, usually at night, and culminates in a red, swollen, hot, tender joint). The metatarsal-phalangeal joint at the base of the big toe is frequently affected. Fatigue and fever may also be reported.
	Elevated uric acid levels in the blood are tpically present and may be triggered by diet, genetic predisposition, or underexcretion. Examination of joint fluid to visualze the crystals is also used in diagnosis.

	Sometimes patients are classified as over-producers or under-excreters. The latter refers to renal excretion and accounts for about 90% of the cases.
	Dietary triggers include alcohol, fructose rich drinks, meat and seafood.
	The uric acid crystals incite a brisk inflammatory response, and treatment of an acute episode includes icepacks and anti-inflammatory medications such as NSAIDs, cholchicine, and steroids.
	Prevention and treatment of overproduction can be effected with medications like allopurinol, and dietary adjustments are also helpful.
	Chronic elevation of blood uric acid can lead to masses of uric acid crystals known as "tophi". These are hard mineral deposits and can cause a chronc arthritis and bone erosion. Deposits in the kidneys can lead to a "Urate nephropathy" and can also potentiate the formation of kidney stones.
	OSTEOARTHRITIS
	Osteoarthritis, also known as degenerative joint disease or DJD is an arthritis caused by excessive wear and tear centered on the articular cartilage with inadequate repair.
	The primary form of the disease is a funnction of excess weight bearing (namely, obesity) and aging. The secondary form of the disease results from trauma or repetative heavy use.
	Patients complain of joint pain on weight bearing that generally gets worse as the day goes on. Joints become tender, stiff and sometimes lock. Joint effusions may also be seen. Hard bony enlargement of the distal (and sometimes proximal) inter-phalangeal joints are a characteristic finding. The result is reduced mobility in everyday activities like walking as particiation in recreation and social activities.
	Damage to the cartilae is progressive resulting in rough surfaces and pits with eventual exposure of bone. Fragments of bone and cartilage beak off into the joint space and aggravate the condition. There is also secondary inflammation in the surrounding tissue and range of motion of the joint is affected.
	The history is very compelling for the diagnosis, but radiologic studies confirm the diagnosis.
	Treatment seeks to minimize stress on the affected joints by pacing, minimal exercise to maintain mobility, and use of adaptive devices like canes, braces, and orthotics. Physical and occupational therapy, massage, and accupuncture have been used, and appropriate analgesics and antiinflammatory medications are used as needed. Nutritional supplements (glucosamine and chondroitin) may help repair damaged joints. Significantly damaged joints require surgical joint replacement.
	Predisposition to falls may add secondary complications including fractures.