Chapter-2 (h)

Musculoskeletal disorders

Musculoskeletal disorders

- Rheumatoid arthritis
- Osteoarthritis

MUSCULOSKELETAL DISORDERS.

Introduction— Musculoskeletal disorders comprise diverse conditions affecting bones, joints, muscles, and connective tissues. These disorders may result in pain and loss of function. It is happening due to the lack of knowledge and irregular/improper diet plan. Now a day, it is big challenges for the modern society and pharmaceutical science.

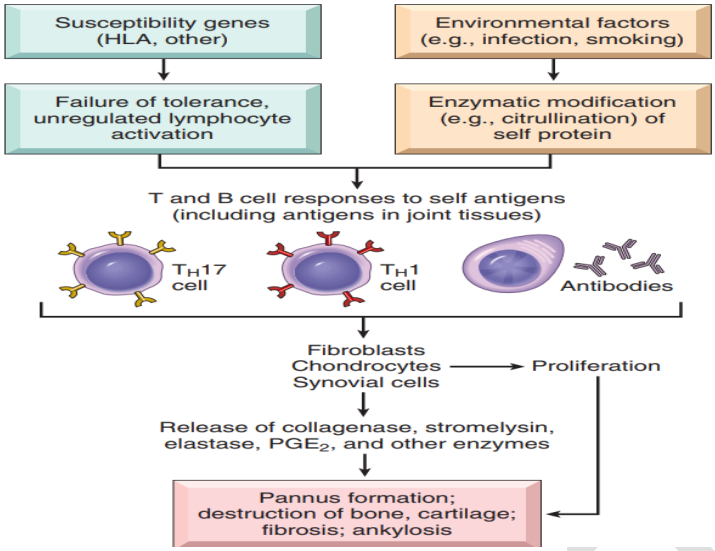
Rheumatoid arthritis

Definition.

Rheumatoid arthritis is a chronic inflammatory disorder of autoimmune origin that may affect many tissues and organs but principally attacks the joints, producing a nonsuppurative proliferative and inflammatory synovitis. Rheumatoid arthritis often progresses to destruction of the articular cartilage and ankylosis of the joints. Extraarticular lesions may involve skin, heart, blood vessels and lungs and, therefore, the clinical manifestations can resemble other systemic autoimmune disorders also.

Etiopathogenesis—

- Immunological factors—As in other autoimmune diseases, genetic predisposition and environmental factors contribute to the development, progression, and chronicity of the disease. The pathologic changes are mediated by antibodies against self-antigens and cytokine-mediated inflammation, predominantly secreted by CD4+ T-cells.



Major processes involved in the pathogenesis of rheumatoid arthritis

- Hormonal factors— Sex hormones may play a role in rheumatoid arthritis, as evidenced by the disproportionate number of females with this disease, its amelioration during pregnancy, its recurrence in the early postpartum period, and its reduced incidence in women using oral contraceptives. Hyperprolactinemia may be a risk factor for rheumatoid arthritis.
- Others factors— Smoking is the most significant non-genetic risk with rheumatoid arthritis being up to three times more common in smokers than non-smokers, particularly in men. Vitamin D deficiency is more common in patients with rheumatoid arthritis also.

Clinical manifestations—

- Systemic lupus erythematosus or scleroderma.
- Stiffness and pain in the joints.
- Swelling of joint.
- Redness and warmth of joints.
- Muscle destruction and fatigue.
- Loss of appetite, which can lead to weight loss.
- Fever and neurological disorders.

Pharmacological management—

- Adjuvant drugs— Diacerein, auranofin, hyaluronate sodium, gold sodium thiomalate, aurothioglucose, prednisolone.
- DMARDs (Disease-modifying antirheumatic drugs)—
  1. Biological agents—
     - TNF-α Inhibitor—Etanercept, infliximab, tasonermin, afelimomab, abatacept.
     - IL-1 antagonist— Tocilizumab, sarilumab.
  2. Non-biological agents— Chloroquine, hydroxychloroquine, methotrexate, azathioprine, cyclosporine, sulfasalazine.
- Other drugs— bucillamine, upadacitinib.

Non-Pharmacological management—

- Make the diet charts and follow accordingly and avoid the fattier and lipids contents in the diet.
- Change the lifestyle and apply the home remedies means replace the allopathic medicine with ayurvedic medicine (because of less side effects)
- Regular practice of yoga exercise and other physical exercise
- During more pain condition rest is required and follow the heat and cold for managing pain (Both heat and cold can relieve pain in joint. Heat also relieves stiffness, and cold can relieve muscle spasms and pain).
- Avoid the smoking and alcoholism.

Osteoarthritis

Definition.

Osteoarthritis, also called degenerative joint disease, is characterized by degeneration of articular (hyaline) cartilage that results in structural and functional failure of synovial joints. The term osteoarthritis implies an inflammatory disease, it is considered to be an intrinsic disease of cartilage in which chondrocytes respond to biochemical and mechanical stresses resulting in breakdown of the matrix. **The knees and hands are more commonly affected in women and the hips in men.**

It is understood by two stages-

- Primary osteoarthritis/idiopathic— In most instances osteoarthritis appears insidiously, without apparent initiating cause, as an aging phenomenon is called primary osteoarthritis. In these cases, the disease is usually oligoarticular (affects few joints) but may be generalized.
- Secondary osteoarthritis— osteoarthritis appears in younger individuals with some predisposing condition, such as joint deformity, a previous joint injury, or an underlying systemic disease such as diabetes, hemochromatosis, or marked obesity that places joints at risk. In these settings the disease is called secondary osteoarthritis.

Etiopathogenesis— The articular cartilage responsible for frictionless movement of the joint and also provide resistance against tension and compression, from type II collagen and proteoglycans, respectively, both synthesized by chondrocytes. Any deformity or pathological changes occurs in the chondrocyte and matrix leads to the osteoarthritis.it is understood by three stages.

1. Chondrocyte injury, related to genetic and biochemical factors.
2. Early osteoarthritis, in which chondrocytes proliferate and secrete inflammatory mediators, collagens, proteoglycans, and proteases, which act together to remodel the cartilaginous matrix and initiate secondary inflammatory changes in the synovium and subchondral bone.
3. Late osteoarthritis, in which repetitive injury and chronic inflammation lead to chondrocyte drop out, marked loss of cartilage, and extensive subchondral bone changes.

Environmental and genetic influences contribute to the pathogenesis of OA. The major environmental factors relate to aging and biomechanical stress.

Clinical manifestations—

- Radicular pain
- Muscle spasms, muscle atrophy/weakness.
- Joint tenderness and stiffness.
- Loss of flexibility and
- Neurologic deficits.

Pharmacological management—

- NSAIDs— Ibuprofen, naproxen, indomethacin, sulindac, fenoprofen, piroxicam, diclofenac, tramadol.
- Corticosteroids— Prednisone, prednisolone.

Non-Pharmacological management—

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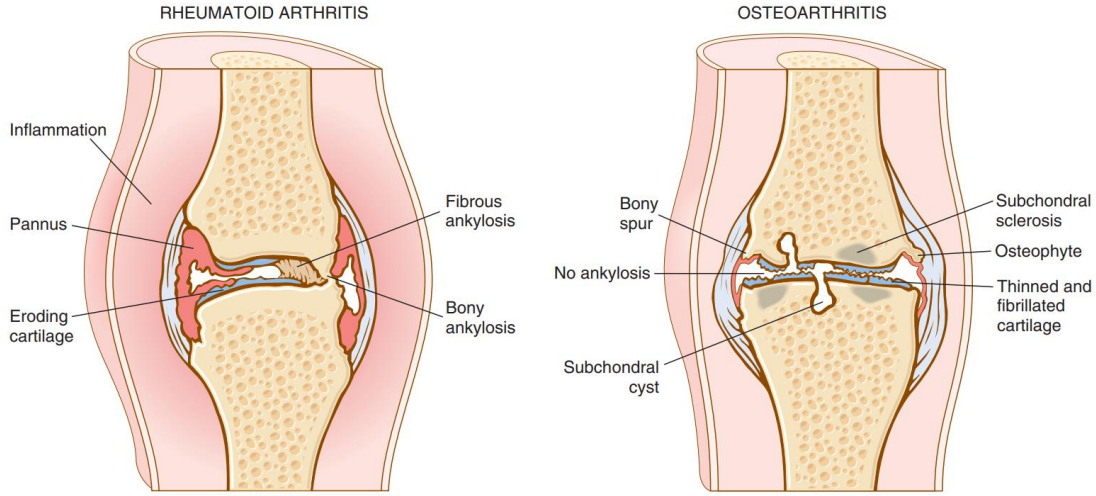

Morphological comparison.