RHEUMATOID ARTHRITIS

DEFINITION

Rheumatoid arthritis is a long-term autoimmune disorder that primarily affects joints.

It typically results in warm, swollen, and painful joints.

Pain and stiffness often worsen following rest.

Most commonly, the wrist and hands are involved, with the same joints typically involved on both sides of the body.

SYMPTOMS

Symmetrical Pain

Swelling

Nodules

In hand: Distal interphalangeal joints

Proximal interphalangeal joints

Metacarpophalangeal joints

Wrist.

CLINICAL MANIFESTATIONS

On progression of the disease leads to:

Swan neck

Boutonniere or Button hole deformity

Z- deformity of thumb

EPIDEMIOLOGY

RA affects between 0.5 and 1% of adults in the developed world with between 5 and 50 per 100,000 people newly developing the condition each year.

In 2010 it resulted in about 49,000 deaths globally.
Onset is uncommon under the age of 15 and from then on the incidence rises with age until the age of 80
Women are affected three to five times as often as men.

ETIOLOGY

Genetics
Human leucocyte Antigen; HLA-DR1 & HLA-DR4.
Environment
Cigarette smoke
Pathogens like bacteria

Environmental trigger can produce HLA gene.
HLA gene can modify our own antigens.
On modification; T cells, B cells, Plasma cells get activated.
On activation of these cells, they produce antibodies which act against self antigen.
Antibody called anti- citrullinated antibody

Macrophage activation
Macrophage activation leads to production of cytokine mediators such as TNF alpha, IL-1 and IL-6.
These mediators combinely cause inflammation.
These mediators activates Fibroblast cells leads to proliferation in the synovium.
This Fibroblast cell activation and cytokine mediators activate RANKL gene causes Osteoclast and Bone erosion.
Cytokine mediators also activate Fibroblast cell in synovial fluid and produce protease enzyme which degrade the cartilage in the Bone.

T- cell activation
T- cell activation produce inflammation.
Proliferation of Fibroblast cell in the synovium.

This proliferated cell can migrate from joint to joint and causes pain called as symmetric pain.

Other cells
Plasma cells in the synovium produce inflammation.
Neutrophils and immune complex present in the synovial fluid produce inflammation in the synovium.

COMPLICATIONS
Nodules in skin
Anaemia
Atherosclerotic plaque
Myocardial infarction
Stroke
Fatigue
Depression
Osteoporosis
Insulin resistance
Muscle weakness
Thrombocytosis

TREATMENT
NSAIDS
DMARD'S (Disease Modifying Anti- Rheumatic drugs) such as;
Methotrexate
Azathioprine
Hydroxychloroquine
Sulfasalazine
Leflunomide
Corticosteroids
Biological products such as;
Adalimumab
Infliximab

Anakinra

GOUT

DEFINITION

Gout is a form of inflammatory arthritis characterized by recurrent attacks of a red, tender, hot, and swollen joint.

Pain typically comes on rapidly, reaching maximal intensity in less than 12 hours.

The joint at the base of the big toe is affected in about half of cases.

It may also result in tophi, kidney stones, or kidney damage.

Gout is due to persistently elevated levels of uric acid in the blood.

KEY FEATURES

Hyperuricemia: excess serum uric acid level.

Normal level: 2.4-6.0 mg/dl in female, 3.4-7.0 mg/dl in male.

In Hyperuricemia: >6.0mg/dl in female,

>7.0mg/dl in male

Monosodium urate monohydrate (MSUM) crystals: it is the deposition of needle shaped urate crystals in the synovial fluid.

Tophi

Synovitis

Tophi

A deposit of crystalline uric acid and other substances at the surface of joints or in skin or cartilage, typically as a feature of gout.

SIGNS

Marked swelling

Redness, Shiny skin

Synovitis

Post attacks- Pruritus, desquamation of skin

CLINICAL MANIFESTATIONS

Acute synovitis
Chronic erosive and deforming arthritis
Tophi
Nephrolithiasis
Interstitial nephritis

EPIDEMIOLOGY

Gout affects around 1–2% of the Western population at some point in their lifetimes and is becoming more common.
Some 5.8 million people were affected in 2013.
Male is affected more than female in the ratio 5:1.

RISk FACTORS

Obesity
Alcoholism
Diuretic therapy
Dietary excess

ETIOLOGY

Increased intake of urate
High production of uric acid
Diminished Excretion
Chronic kidney failure
Lactic acidosis
Increased tubular reabsorption of uric acid
Drugs like thiazide diuretics and aspirin
Myeloproliferative Disease
Lymphom proliferative Disease
Inherited Disease- Lesch Nyhan syndrome (X- linked recessive form of gout).

Gout may develops in 2 states
Increased production of uric acid

Underexcretion of uric acid.

Increased production of uric acid

Increased uric acid is due to Increased purine metabolism.
Increased purine metabolism is Due to:
Alcohol intake
Dietary intake(high purine diet)
Genetic cause:
Hypoxanthine- guanine phosphoribosyltranferase (HPRT) deficiency.
Phosphoribosylpyrophosphate synthetase (PRS) superactivity.

Underexcretion of uric acid

Underexcretion of uric acid is due to:
Diuretic therapy
Renal Disease
Genetic variations include;
SLC2A9 gene variation
ABCG2 gene variation

One of these two factor increase concentration of uric acid in blood (Hyperuricemia).
This Hyperuricemia leads to formation of Monosodium urtae monohydrate (MSUM) crystals.
MSUM crystals cause inflammation and pain in the joints.