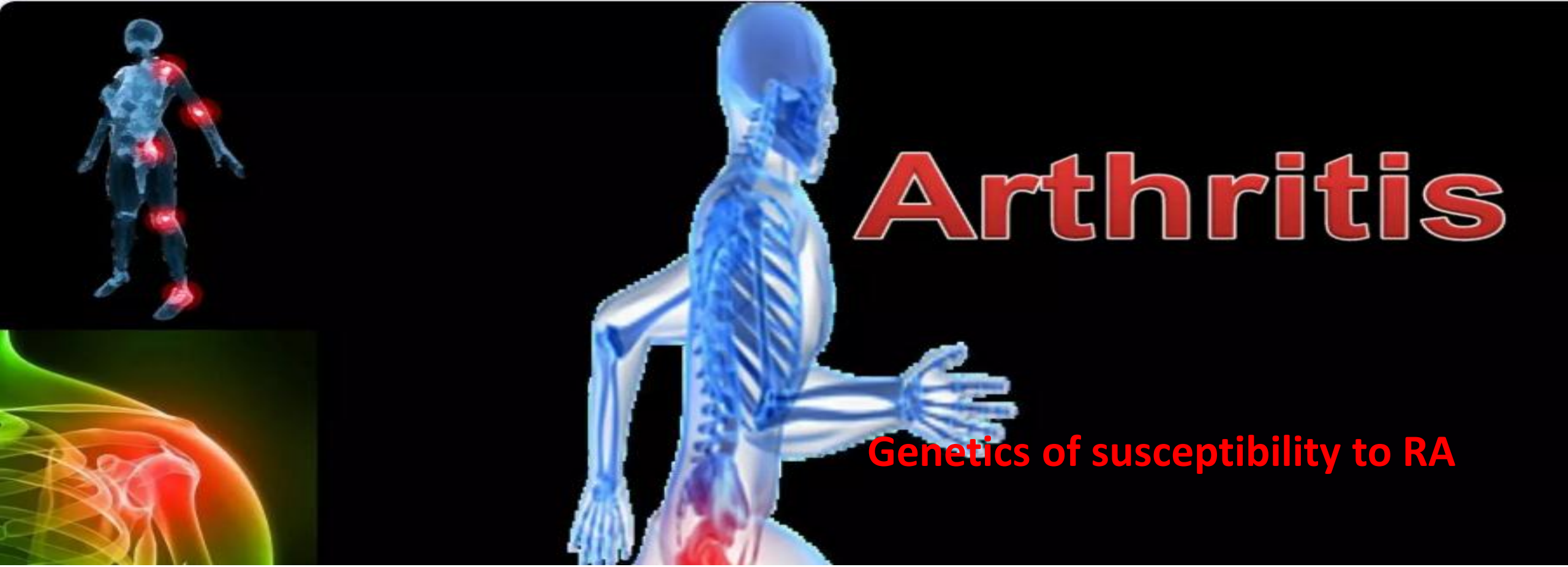
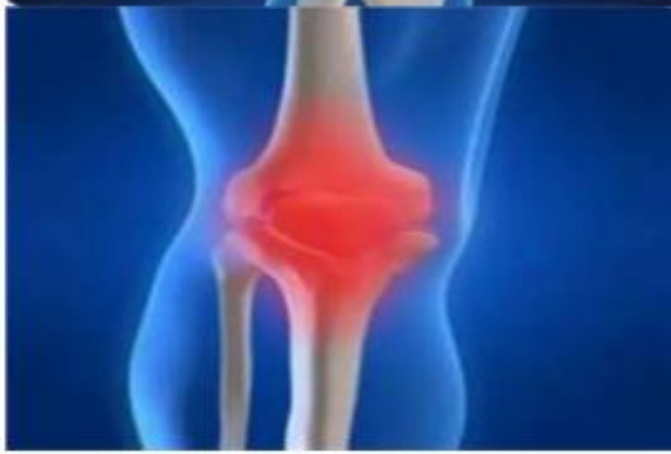


Dr: Shatha Qassim Jawad

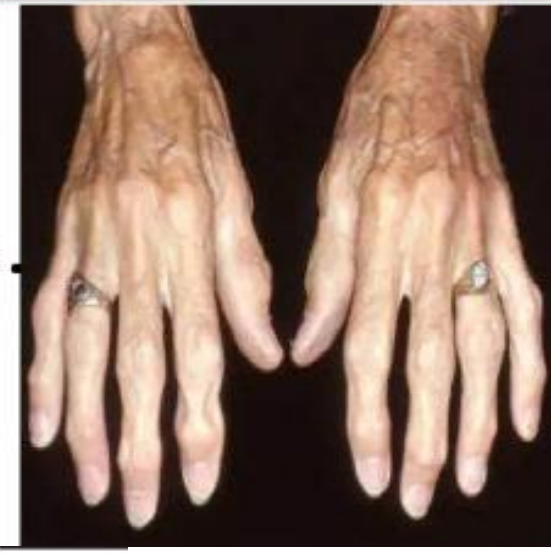
Type of Arthritis

There are more than 100 types of Arthritis. And most common type of them are:



- Osteoarthritis
- Rheumatoid Arthritis
- Gout
- Infectious Arthritis
- Fibromyalgia
- Ankylosing Spondylitis

Osteoarthritis



- It is the most common type of arthritis.
- Also known as degenerative joint disease.
- It occurs in the joints especially in the hands and the weight bearing parts of the body including knee, hip and the spine
- This type of arthritis occurs because of the break down in cartilage.

Osteoarthritis: Symptoms & Causes

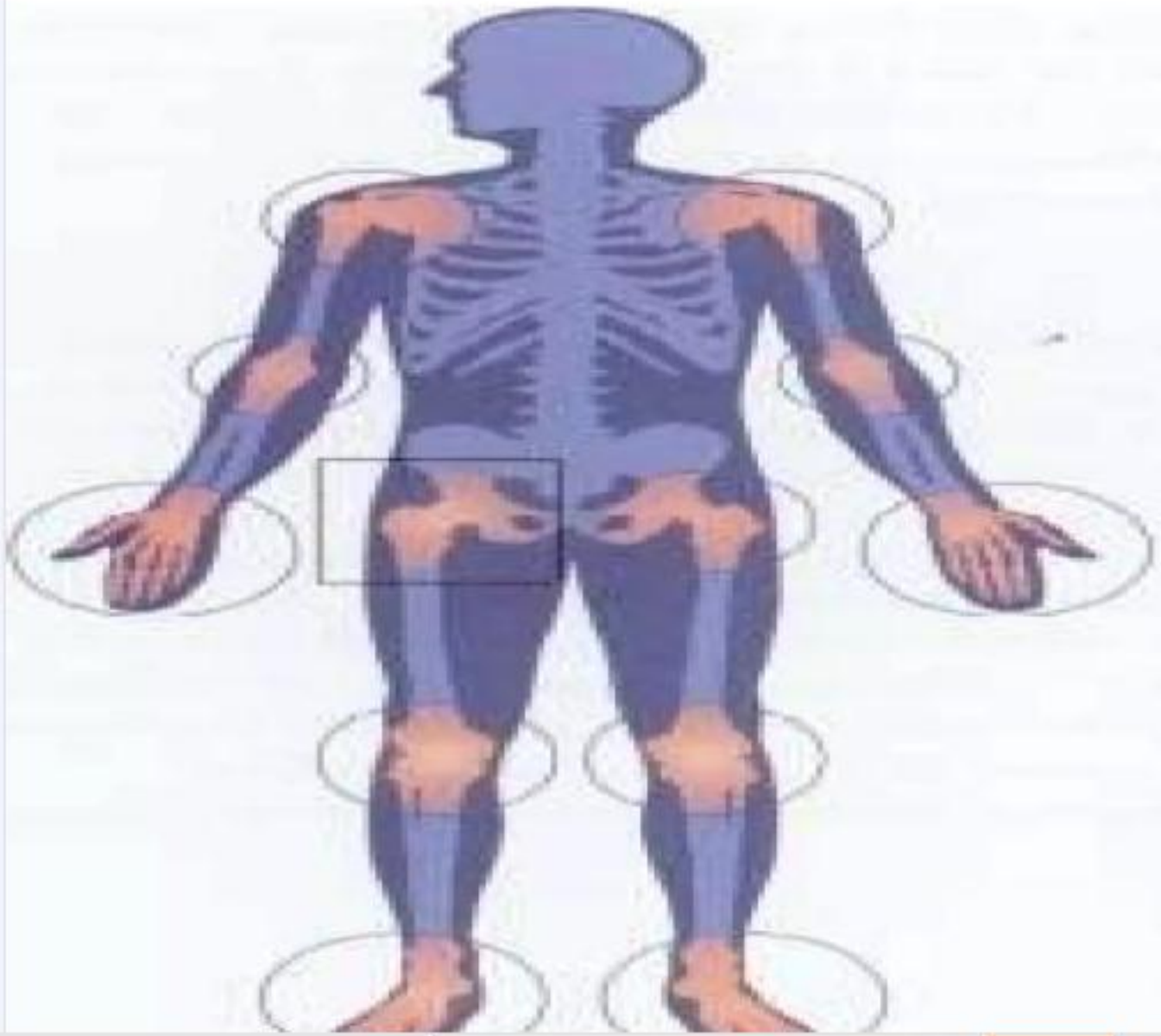
Symptoms

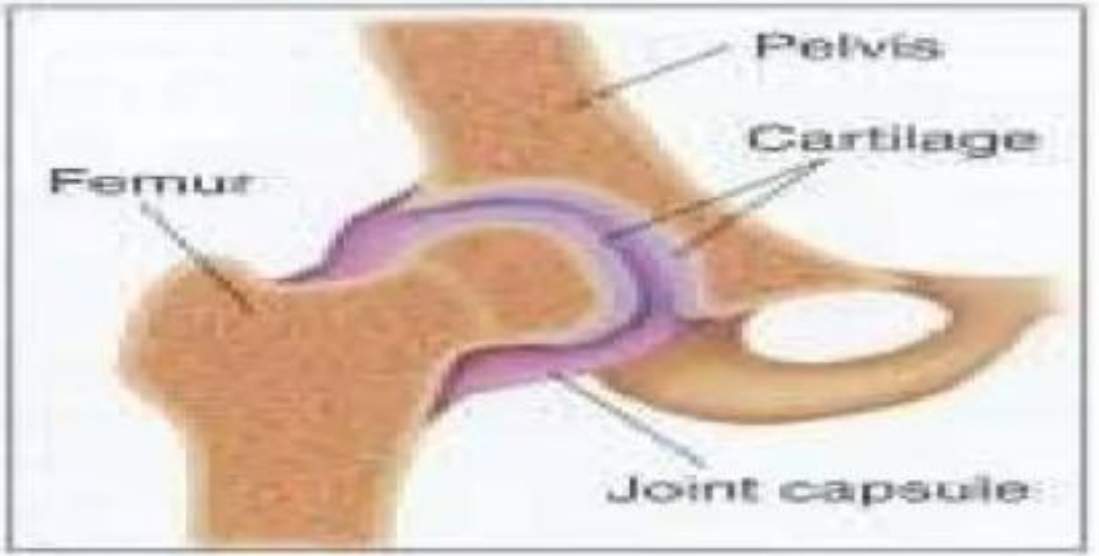
- Joint effusion and stretching of the joint capsule
- Torn menisci
- Inflammation of periarticular bursae
- Periarticular muscle spasm
- Psychological factors

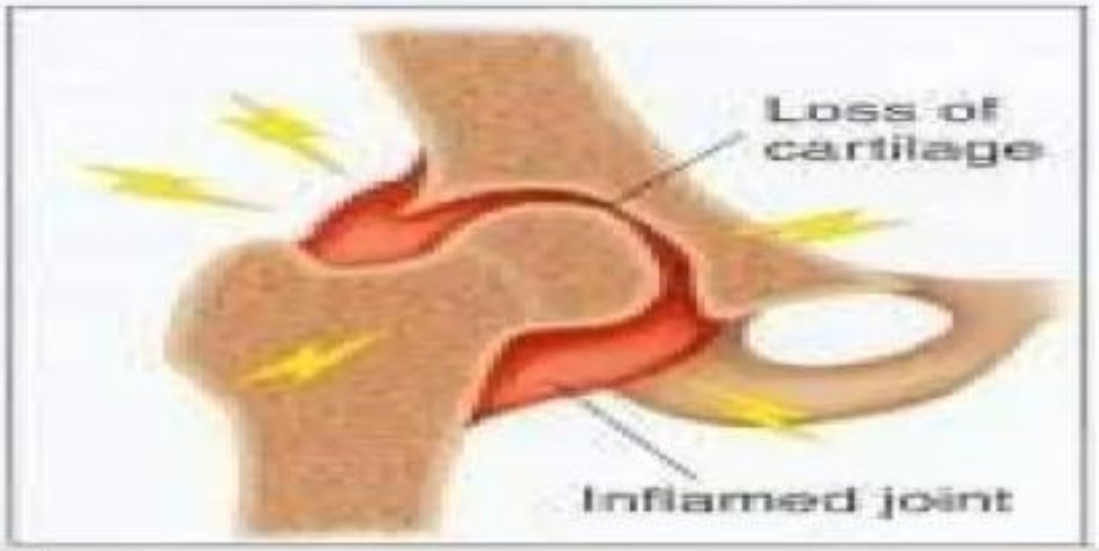
Causes

- Metabolic (hemachromatosis)
- Inflammatory (RA, infection)
- Age
- Gender
- Genetic factors
- Trauma
- Weight

Common places Osteoarthritis affect







Rheumatoid arthritis

- Rheumatoid arthritis is the most common serious inflammatory form of arthritis.
- The primary site of inflammation is the synovial membrane.

- The primary site of inflammation is the synovial membrane.

- Because it may do most of its damage in the first year, early diagnosis and aggressive therapy is critical.
- Left untreated RA may shorten life expectancy by as much as 18 years!
- Rheumatoid arthritis is an autoimmune d

Rheumatoid: Symptoms & Causes

Symptoms

- Inflammation at the joints
- Pain and loss of strength
- Movement limitation around joints of the hands, feet, elbows, knees and neck
- Feeling generally unwell and fatigued
- Stiffness in the morning and after sitting still for a

Causes

- Genetic (inherited) factors
- Environmental factors
- Hormones
- Age
- Gender
- Possible infection by a bacterium or virus

Juvenile Rheumatoid Arthritis

- This is a rare type of arthritis which mainly affects the children
- It causes the pain, stiffness, swelling, loss of function of the joints.

Juvenile Rheumatoid Arthritis: Symptoms & Cause

Symptoms

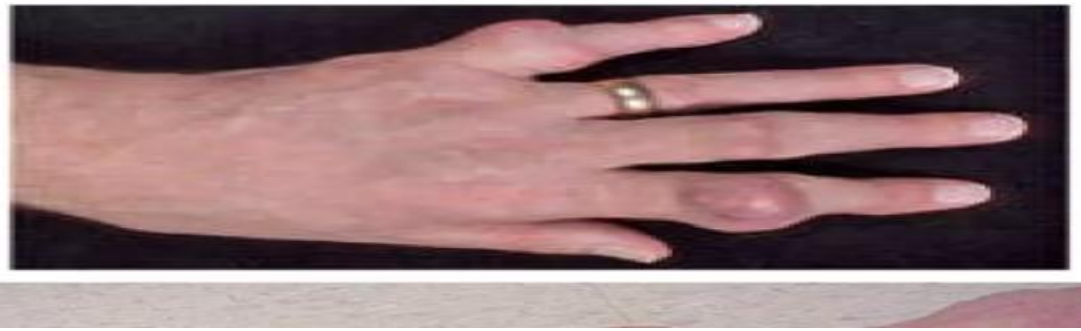
- Symptoms of the disease are fever, rashes, fatigue, early morning stiffness, subcutaneous nodules, growth disturbance in bones, joint swelling, uveitis and swollen nodes

Causes

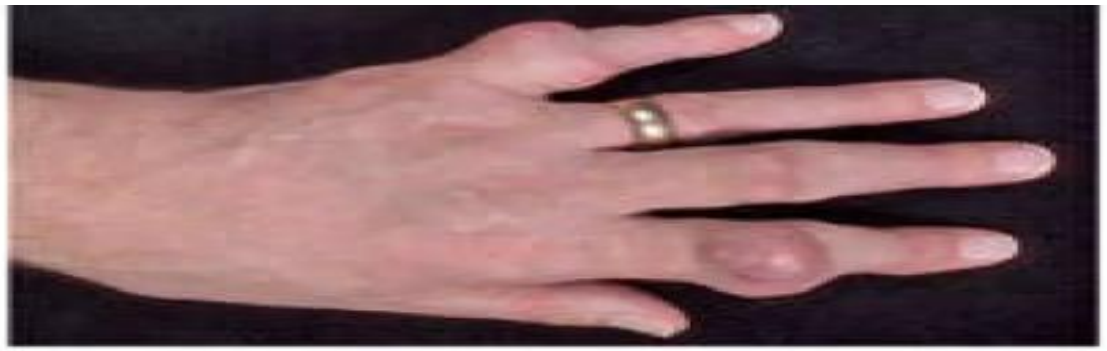
- Juvenile rheumatoid arthritis is an autoimmune disorder.

Gout

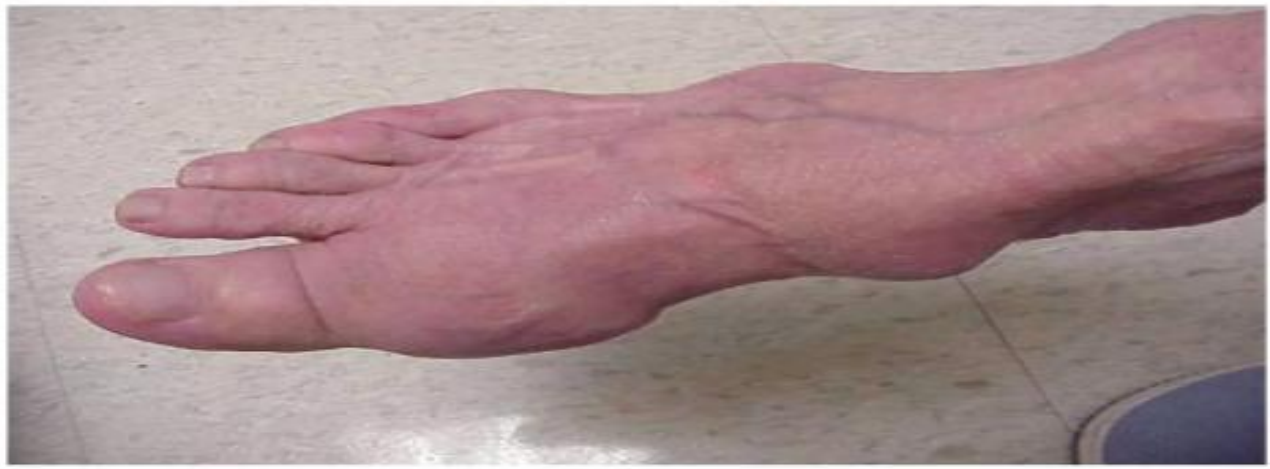
- Gout is created because of the deposits of needle-like crystals of uric acid in the joints



- Gout is created because of the deposits of needle-like crystals of uric acid in the joints



- These crystals cause inflammation, swelling, and pain in the affected joint, which is often the big toe.
- It also affects foot, ankle, knee etc.



Gout: Symptoms & Cause

Symptoms

- Sudden onset of a hot, red, swollen joint
- Kidney stones are more frequent in people with gout.

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- Kidney stones are more frequent in people with gout.

- Uric acid crystals can form outside joints most commonly on the big toe.

Causes

- Kidney fail to excrete uric acid properly.
- Over production of uric acid in the body

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- Over production of uric acid in the body

- Genetics, Gender, and
- Nutrition(alcoholism, obesity) play key roles in the development of gout.

Genetics of susceptibility to RA

a combination of genetic factors compounded by an environmental trigger.

Examples of environmental triggers are smoking and exposure to porphyromonas gingivalis which causes periodontal infection.

Single nucleotide polymorphisms (SNPs) are variations in the DNA code at a specific position in the genome. For example, where one person may have an A allele, another may have a C allele. These variations have been associated with a wide variety of different traits, such as susceptibility to diseases, including RA.

the genetic contribution to disease susceptibility, has been estimated to be around 60%. Interactions of Genes, Autoimmunity and the Environment in Disease

several HLA and non-HLA genes have been implicated in susceptibility to or protection against RA. To date, more than 30 genes have been associated with the disease and these genetic factors account for about 50 % of the genetic variants linked to susceptibility.

HLA associations

The strongest genetic association with susceptibility to RA is located at the HLA-DRB1 gene locus - an HLA class II gene.

It is very likely that HLA-DR genes act indirectly, through the regulation of autoantibody production involved in the development and outcome of RA. Indeed, SE is probably the primary risk factor for increased ACPA(anti citrullinated protein antibody) production in RA. SE alleles (HLA-DRB1*01, DRB1*04, DRB1*10) exert the strongest association with disease susceptibility.

SE was not only associated with positive ACPA titers, but also with absolute serum ACPA levels.

Based on the type of the amino acids at positions 70 and 71, the new classification system divides SE alleles into S1, S2, S3P and S3D groups and denotes all non-RAA motifs as X. A positive association with RA susceptibility was found for S2 & S3P allele carriers, while S1, S3D & X are low risk alleles pooled together as L alleles. Thus, at position 71, lysine (K) confers the highest risk, arginine (R) intermediate risk, while alanine (A) & glutamic acid (E) lower risk. At position 70, glutamine (Q) & R represent higher risk than D.

The Pathogenic and Prognostic Roles of HLA Genes

HLA-DRB1*01 (HLA-DR1) & HLADRB1*04 (HLA-DR4) alleles, containing the SE, are associated with susceptibility to RA.

While the QKRAA, QQRAA & KKRAA amino acid motifs are known SEs conferring susceptibility, the DERAA motif is rather responsible for protective effects.

HLADRB1* 1001 is also a SE-containing allele, which can accommodate citrulline in its antigen anchoring pockets and thus stimulate citrullinated protein-specific T cell responses.

Non-HLA Susceptibility Genes

There are many genetic variations outside the HLA complex associated with RA.

In addition to HLA-DR alleles, several association studies have confirmed the role of other, non-HLA genes in susceptibility to RA. Among & probably the strongest associations have been found with PTPN22 and IL23R genes.

The PADI4 gene encoding the peptidyl arginine-deiminase 4 (PADI4) enzyme is involved in protein citrullination, a key event underlying the pathogenesis of RA.

other important, confirmed loci include TRAF1, CTLA4, IRF5, STAT4, FCGR3A, IL6ST, IL2RA, IL2RB, CCL21, CCR6,CD40 and others.

The gene encoding the intracellular phosphatase protein tyrosine phosphatase non-receptor type 22 (PTPN22)shows the second strongest association with RA, right after HLA-DRB1. This allele has been linked to other autoimmune diseases .

The C1885T polymorphism of the PTPN22 gene leading to an amino acid change from Arg to Trp at amino acid position 620 confers risk for these diseases. This SNP has been associated by many groups with ACPA and rheumatoid factor (RF) positive RA and probably worse prognosis. The association of this locus with RA severity has been suggested, but it may be weak and could not be reproduced by some groups. The presence of PTPN22 C1885T polymorphism, in addition to SE and ACPA status strongly supports the early diagnosis of RA.