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Rheumatoid Arthritis – An Ailment Which Cripples The Whole World

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Joints:

Normal structure:

Joints are of 2 types- diarthrodial or synovial joints with a joint cavity and synarthrodial or nonsynovial joint without cavity. Most of the diseases of joints affect diarthrodial or synovial joints. In diarthrodial joints, the ends of two bones are held together by joint capsule with ligaments and tendons inserted at outer surface of the capsule. The articular surfaces of bones are covered by hyaline cartilage, which is thicker in weight bearing areas than in nonweight bearing areas. The joint space is lined by synovial membrane or synovium, which forms synovial fluid that lubricates the joint during movements. The synovium may be smooth or thrown into numerous folds and villi. The synovial membrane is composed of inner layer of 1 to 4 cell thick synoviocytes and outer layer of loose vascular connective tissue. On electron microscopy, two types of synoviocytes are distinguished: type A and B. Type A synoviocytes are more numerous and are related to macrophages and produce degradative enzymes, while type B synthesize hyaluronic acid.

Rheumatoid Arthritis:

It is chronic multisystem disease of unknown cause. Most prominent manifestation of it is inflammatory arthritis of the peripheral joints, usually with a symmetrical distribution; its systemic manifestations include haematologic, pulmonary, neurological and cardiovascular abnormalities. It is common disease having peak incidence in third to forth decades of life, with 3 to 5 times higher preponderance in females. It has high association with HLA-DR4 and HLA-DR1 and familial aggregation. Onset of disease is insidious, beginning with prodome of fatigue, weakness, joint stiffness, vague arthralgias and myalgias; followed by pain and swelling of joints usually in symmetrical fashion, especially involving joints of hands, wrists and feet. Unlike migratory polyarthritis of rheumatic fever, it usually persists in the involved joint. Approximate 20% of patients develop rheumatoid nodules located over the extensor surfaces of the elbows and the fingers. Nearly 80% cases seropositive for rheumatoid factor; rheumatoid factor titers are elevated in certain unrelated diseases too, such as in viral hepatitis, cirrhosis, sarcoidosis and leprosy. Advanced cases show character radiologic abnormalities such as narrowing of joint space and ulnar deviation of the fingers and radial deviation of the wrist. Other laboratory findings include mild normocytic and normochromic anaemia, elevated ESR, mild leucocytosis and hypergamaglobulinaemia. Extra-articular manifestations infrequently produce symptoms, but when present complicate the diagnosis.

Etiopathogenesis:

Present concept on etiology and pathogenesis proposes that rheumatoid arthritis occurs in an immunogenetically predisposed individual to the effect of microbial agents acting as trigger antigen. More recently, the role of super antigens, which are produced by several microorganisms with capacity to bind to HLA-DR molecule (MHC-II region) (Fig. 1).

Immunologic derangements:

Role of immune processes, particularly autoimmune phenomenon, in development of rheumatoid arthritis include,

– Detection of circulating autoantibodies called rheumatoid factor vs FC portion of autologous IgG in about 80% cases of rheumatoid arthritis. Rheumatoid factor (RF) antiantibodies are heterogeneous and consist of IgM and IgG class.

– Presence of antigen-antibody complex [IgG-RF] in the circulation as well as in synovial fluid.

– Presence of other autoantibodies such as antinuclear factor, antibodies to collagen type