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Joint Manifestations of Rheumatoid Arthritis

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Introduction

Rheumatoid arthritis (RA) is a common autoimmune disorder, affecting approximately 1% of the population worldwide. The interaction of genetic and environmental factors results in a cascade of immune reactions, which eventually lead to the development of structural bone damage, joint damage, and synovitis (Gobashy, 2012). We understand more about the pathophysiology of this crippling disease. Early recognition of RA is encouraged so that effective management can be started before pathological changes become irreversible (Gobashy, 2014). It is the goal of this poster to outline the signs and symptoms of RA, target population, and treatment options available to patients who suffer from joint manifestations of RA.

Rheumatoid arthritis usually manifests itself as a symmetrical arthritis affecting multiple small and large synovial joints (McPhee & Hammer, 2010). Involvement of the small joints of the hands, wrists, and feet as well as the larger, peripheral joints, including the hips, knees, shoulders, and elbows, is typical (McPhee & Hammer, 2010). Sarcoidosis and rheumatoid arthritis are the most common causes of synovitis (McPhee & Hammer, 2010).

RA is an autoimmune disease. The major distinguishing characteristics of RA are that it is autoimmune, inflammatory, chronic, and systemic. (Dewey et al., 2012). The initial triggers of RA are unclear; hormones, genetics, and environmental factors may all play a role. Once the initial immune response is triggered, cells of the immune system produce autoantibodies and inflammatory cytokines, creating a cascade of inflammation resulting in the formation of pannus the insertion and destroys cartilage and bone (Dewey et al., 2012). Additional joint damage and systemic complications ensue, resulting from a complex process of inflammatory mediators being released in the affected joint (Dewey et al., 2012).

Much of the pathological damage that characterizes rheumatoid arthritis is centered around the synovial linings of joints (McPhee & Hammer, 2010). Normal synovium is composed of a thin cellular lining (one to three cell layers thick) and an underlying interstitium, which contains blood vessels but few cells (McPhee & Hammer, 2010). The synovium normally provides nutrients and lubrication to adjacent articular cartilage. Rheumatoid arthritis synovium, in contrast, is markedly abnormal, with a greatly expanded lining layer (4-10 cell thick) composed of activated cells and a highly inflammatory interstitial reptile with B cells, T cells, and macrophages and vascular changes (including thrombosis and neovascularization) (McPhee & Hammer, 2010). At sites where synovium and articular cartilage are contiguous, rheumatoid arthritis synovial tissue (called pannus) invades and destroys adjacent cartilage and bone (McPhee & Hammer, 2010).

Advances in therapy have dramatically altered the long-term outlook for patients with rheumatoid arthritis. It is now clear that early diagnosis and subsequent treatment with combination drugs can minimize or even prevent the pain, joint destruction, and extra-articular complications associated with rheumatoid disease (Eleanor, 2003). Rheumatoid arthritis is treated with a comprehensive program of pharmacology agents to decrease inflammation, physical therapy to maintain function, and surgery to prevent or correct deformities, should they occur despite aggressive medical therapy (Eleanor, 2003). Goals of treatment are to relieve pain, decrease inflammation, maintain function, prevent joint damage, and systemic illness. There is no cure, but disease-modifying anti-rheumatic drugs can help produce long-term remission of the disease (Eleanor, 2003).

Pathophysiology

The signs and symptoms of rheumatoid arthritis include the following:

- Fatigue
- Joint inflammation
- Joint pain
- Weakness and fatigability
- Morning stiffness
- Rheumatoid nodules

Rheumatoid arthritis is most prevalent in middle-aged women and is insidious in onset. Antinuclear antibodies are present in the serum and in the synovial lining fluid. In the case of RA, the immune system attacks the body's own tissues. Rheumatoid arthritis presents with joint and muscle pain and stiffness. In severe cases, it eventually leads to the development of joint destruction.

The signs and symptoms of rheumatoid arthritis include:

- Small and large joint pain and swelling
- Morning stiffness
- Fatigue
- General malaise
- Anemia

Additional Sources


References


Conclusion

Early diagnosis and immediate, aggressive treatment of RA are crucial, because only a brief window of opportunity exists to prevent permanent disability and lifelong complications. Diagnosis can be difficult as early symptoms mirror osteoarthritis, flu, and other viral illnesses. Rheumatologist consults can be beneficial as specialists can recognize subtle clues that are due to accurate early diagnosis and treatment (Arthritis, 2014). Significant advances have been made in the diagnosis and treatment of RA in recent years, and treatment effectiveness has greatly improved with the use of biologic medications (Salt & Crofford, 2012). However, the proportion of patients not reaching remission in RA remains high, indicating further research (Salt & Crofford, 2012).