Disease Topic Paper

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Introduction:

Rheumatoid Arthritis (RA) is a systemic and chronic autoimmune disease. Usually, the immune system attacks viruses, bacteria, and other foreign entities. However, with an autoimmune disease the immune system mistakenly targets the body. RA is an inflammatory disease and occurs as the immune system targets healthy cells by mistake and causes inflammation. The immune system attacks the lining of the joints, called the synovium, and can cause great pain as a result (3). The hands, knees, and ankles are most commonly affected. However, RA can affect a person's heart, eyes, and lungs among other tissues (2). Rheumatoid Arthritis does not currently have a cure and as such, study of the disease and therapies is very important to improve patients' quality of life.

Causation:

Rheumatoid Arthritis is an autoimmune condition that causes the body to target its own joints and other tissues. At this point it is not known exactly what causes someone to develop RA. A genetic factor seems to exist. While specific genes do not cause RA, they do make it possible to develop RA in response to environmental factors. These factors can be certain bacteria and viruses. RA is considered a multifactorial disease as both genetic factors and environmental factors lead to expression of the disease (1). Risk factors for who is likely to develop RA exist. These include: age, sex, family history, smoking, and obesity (2). First, women are much more likely to develop RA than men are. Some estimate women to be almost three times as likely to develop RA than men. Age is another factor as RA usually develops at middle age. Family history is a large risk factor as chances increase when related to someone with RA. Smoking also increases the risk of developing RA as does being overweight or obese.

Signs & Symptoms:

Symptoms of Rheumatoid Arthritis can be serious and unpleasant. Early symptoms of RA include: joint pain, tenderness, morning stiffness, and small joints being affected first. RA can be difficult to differentiate from Osteoarthritis (OA) (2). OA is caused by normal wear and tear and affects some joints. RA is autoimmune and affects joints symmetrically (2). This means that the same joints on both sides of the body will be affected. OA also only affects the joints, whereas RA can affect other tissues. RA can also cause inflammation in the heart muscle and blood vessels. RA can lead to bone erosion and joint deformities, both of which are very painful (2). Some people will also develop rheumatoid nodules under the skin. Overall, RA has painful symptoms that need to be managed effectively to ensure a high quality of life.

Epidemiology:

Rheumatoid Arthritis can affect anyone, and its prevalence is reported across the world. Many studies taken in Europe and North America estimate a prevalence of 1% among the population (1). It is also estimated that RA has a mean annual incidence of 0.02-0.05% (1). This figure represents the number of new cases of RA divided by the number of the people at risk of developing RA. The occurrence of the disease seems to be higher in some parts of the world, such as North America and western Europe. People with RA also have an increase in mortality as average lifespan is reduced 3-10 years (1). Some studies have also suggested that RA cases have declined since the 1960's (1). Overall, RA affects many people across the world.

Diagnosis:

As there is no cure yet for RA, early diagnosis and treatment is key. There is no one test to determine if a patient has RA, as the symptoms of RA are similar to other conditions (2). A

physical would be conducted as well as imaging tests and/or blood tests. During the physical, the physician would check for joint swelling, warmth, or redness (2). Imaging tests may include X-rays or MRIs. They can be used to diagnose and track the progression of RA. Blood tests would look for certain factors that could indicate inflammation in the body. They may check the C-reactive protein level or look for rheumatoid factor protein levels (2). Once a diagnosis is certain, treatment can begin.

Treatment:

Treatment for Rheumatoid Arthritis is focused on managing symptoms as the disease can not be cured. Treatment therapies consist of many different pharmaceutical types. Modern pharmacologic include conventional, biological, and small molecule disease-modifying anti-rheumatic drugs (3). These drugs are a mainstay of RA treatment and have shown significant steps toward disease remission (2). An example of a biologic is Adalimumab, which is an anti-tumor necrosis factor monoclonal antibody (4). This drug is effective for patients who have not seen positive results under the first-line treatment, methotrexate (5). Overall, many therapies exist, and physicians use them to effectively manage symptoms and slow progression of RA.

Current Research:

Research for new treatments of rheumatoid arthritis is always ongoing. Monitoring for adverse side effects of these drug therapies is needed. Aside from new drug research, there is potential for new treatments. Gene therapy is in the early stages of research and could be the key to future treatments (3). Gene therapy would treat the disease at its root, rather than symptoms (3). This could be effective, as many of the current drugs have side effects that need to be

managed. In conclusion, future research could be vital to helping those afflicted by rheumatoid arthritis.

References

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