

# Rheumatoid arthritis research paper sample

[Health & Medicine](#), [Body](#)



## **University Rheumatoid Arthritis**

Rheumatoid arthritis (RA) is an autoimmune disease more common in women than men. It is an inflammatory disorder of the joints especially in the hands and legs which becomes chronic over time. The joints become tender and cause inflammation that could lead to serious disability which might also lead to death in some cases (Aletaha et al, 2010).

### **Etiology of Rheumatoid arthritis**

The etiology of the disease has not been clearly understood so far. RA condition manifests itself when the components of the autoimmune system losses control and attack specific tissues in the body as they fail to distinguish between the tissues in the body and a foreign component. There are reports of a combination of genetic factors, environmental factors and abnormal immune responses, as a possible cause for RA (Fattahi and Mirshafiey, 2012).

**Genetic Factors:** About 30 to 50% of the genetic risk has been attributed to the Human Leukocyte Antigen (HLA) locus alone. Some of the loci which have been associated with RA are HLA-DRB1, TRAF1/C5, RAD14, PTPN22, CTLA4 and STAT4. Normally, the HLA-DR antigens role is to deliver the antigen to T lymphocytes. The role of PTPN22 which is the protein tyrosine phosphatase is to activate the T-cell and the B-cells. Although these factors alone have not been found to cause RA, they have been found to accelerate the disease progression (Fattahi and Mirshafiey 2012; Loyola-Rodriguez et al, 2010; Goldstein et al, 2010).

**Environmental Factors:** There are reports of smoking as a possible causative

factor which interacts with the HLA-DRB1 protein that would in turn activate the development of immunity to the modified version of the protein citrulline and its affects. However, RA does not manifest immediately, but would take many years to show its signs and symptoms. There are also several reports of bacteria and viruses as possible causative agents which trigger the inflammatory response in the tissues. Antibodies released from such microorganisms have been found in the tissue samples of individuals suffering from RA. However, there is no conclusive evidence so far to support this association (Fattahi and Mirshafiey, 2012; Loyola-Rodriguez et al, 2010; Goldstein et al, 2010).

Immune response: The two main types of the lymphocytes from the immune system family are known to play a role in the manifestation of RA are the T cells and the B cells. Normally the function of the immune system is to eliminate infection causing agents, repairing the cuts and injuries by causing inflammation in the body. If the T cells identify a particular antigen as a foreign body, it makes a chemical called cytokines (interleukin) and tumor necrosis factor which in turn activates the B cells to undergo division and release antibodies (immune proteins) into the bloodstream. These antibodies cause inflammation in the body in order to destroy the foreign antigen. In patients suffering from RA, both the lymphocytes (T cells and the B cells) are over expressed. This causes severe inflammation in the joints which eventually disrupts the joints (Marino and Grey, 2012; Fattahi and Mirshafiey, 2012).

## **Prevalence**

In the general population, the prevalence has been found to be around 0.5% to 1.0%. Although the manifestation of the disease cannot be categorized to a particular age group, it has been noted that individuals between the age group of 40 to 60 years of age are more affected when compared to young individuals (Fattahi and Mirshafiey, 2012).

## **Signs and Symptoms:**

The signs and symptoms usually vary between individuals and also with the severity of the disease. The RA disease is a progressive disorder which affects primarily the joints on the hands (wrists and fingers) and the legs (knees, feet and ankles). As the disease progresses, other joints in the body (shoulder, elbows and hip) are also affected.

## **Some of the signs and symptoms of the disease are as follows (Turner et al, 2010, Scott et al, 2010, Wasserman, 2012):**

- The joints become warm and swollen; stiff and tender when there is no movement for sometime (almost 1 hour).
- Joints of both the hands and legs become very painful. Gradually, the functions of the joints are disrupted and they lose their normal shape and structure.
- The hands and the legs develop burning sensation and numbness in them.
- In severe cases small nodule like structures appear below the skin which is an indication that the disease has reached an advanced stage.
- In many cases chest pain followed by breathing difficulties; dry mouth; itching, burning, dry eyes with discharge, fever, suffer from weight loss and

tiredness is also seen.

- Because of severe body pain the individuals are unable to sleep.

## **Diagnosis**

The early signs of the RA disease resemble other common disease as a result of which the diagnosis is made only when the disease has progressed to some extent. Although, there are no specific tests to diagnose the disease there are several tests which can be used to make a diagnosis. The diagnosis is usually made based on the auto antibodies present in the body. The common blood tests are as follows (Turner et al, 2010, Scott et al, 2010, Wasserman, 2012):

- Rheumatoid factor: Although this test is not specific to diagnose RA.
- Anti-Cyclic Citrullinated Peptide Antibody: This test is also used to diagnose RA and also monitor the prognosis of the disease.
- Complete blood count: This test is commonly used to check the different components of the blood.
- C-reactive proteins: This test is used to identify if there is any inflammation in the body caused by tissue injury.
- Erythrocyte sedimentation test: This test is also used commonly to identify any infection and or inflammation in the body caused by tissue injury and also to monitor the disease progress.
- Synovial fluid analysis: The fluids in the joints are called as synovial fluid. This test is used to diagnose the cause of the inflammation in the joints.
- X-Ray and Ultrasound of the Joints: This is done to assess the health of the joints to determine if there is any damage and also to monitor the progress of the disease.

## **Treatments**

So far there is no treatment to cure the RA disease. However, the disease can be managed efficiently with proper treatment and care. The treatment options available are as follows (Turner et al, 2010, Scott et al, 2010, Wasserman, 2012):

### **Medications:**

- Disease modifying antirheumatic drugs (DMARDs): These medicines belong to the first set of medications which were prescribed to patients suffering from RA. These could be either biologic or non biologic agents.
- Biologic agents: These medications are manufactured using a biological source which include components like the antibodies (monoclonal) and recombinant receptors which aid in preventing the cytokines which cause inflammation. Some of the drugs commonly used are anti-TNF agents, abatacept, anakinra, rituximab and tocilizumab. Individuals taking such kind of medications should be monitored as in some cases there is a risk of infection from microorganisms (bacteria or virus), leukemia and psoriasis.
- Nonbiologic agents: These nonbiologic medications are small molecules which are manufactured in chemical reactors. Some of the medications used more frequently are methotrexate, leflunomide, hydroxychloroquine, sulfasalazine and minocycline. Some of less frequently used medications are gold sodium thiomalate, penicillamine, cyclophosphamide and cyclosporine. However, these medications have been found to have severe side effects, due to which regular monitoring of the condition is necessary by undergoing blood tests.
- Anti-inflammatory medications: Some of the commonly used anti-

inflammatory medications are the aspirin, nonsteroidal anti-inflammatory drugs (ibuprofen and naprosen) and celecoxib. Although these medications aid in controlling the pain as well as the inflammation in the joints, they have been found to cause severe stomach related issues, stroke, heart disease etc.

- Corticosteroids: These kinds of medications are also commonly used to reduce joint pain, swelling and inflammation. However, they are used only for a short time as long term use could cause serious side effects.

- Surgery: In many cases when the disease has progressed significant causing damage to the joints, surgery is recommended. Different kinds of surgery in such cases are as follows:

- Synovectomy: The damaged joints are completely removed.

- Joint replacement surgery: The damaged joints are replaced using an artificial joint made of plastic or metal.

- Physical therapy and Exercise:

- Nutrition:

Foods with rich omega 3-fatty acid like the fish in diet and having a well balance diet are recommended to patients with RA.

## **Prognosis**

The prognosis of the individuals suffering from RA depends on the severity of the disease. The conditions of the individuals who develop RA at a very young age worsen quickly when compared to individuals who develop RA at a later stage. However, there are reports which indicate that the life span of patients with RA is less by 3 to 12 years when compared to the general population. Although the disease itself is not directly the cause of death, the

associated conditions like cardiovascular disease result in death of the individuals. However, by timely diagnosis, proper treatment using the biologic drugs would delay the damage to the joints (Turner et al, 2010, Scott et al, 2010, Wasserman, 2012).

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