



DISEASE FACT SHEET

Rheumatoid Arthritis

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There are over 100 different types of arthritis, with rheumatoid and osteoarthritis being the most common. Rheumatoid arthritis is a disease in which inflammation (pain, heat and swelling) affects the joints and sometimes other organs of the body. The hands, feet and knees are most commonly affected, and often suffer from restricted movement due to the inflammatory response.

The onset of rheumatoid arthritis is usually in middle life (between 25 and 45), although it can affect children as young as three years old. This disease affects about two percent of the Australian population, mostly female. Most people with rheumatoid arthritis continue to lead full and active lives, and this is made possible by understanding and appropriately managing the disease.

What are the causes and symptoms?

In rheumatoid arthritis, the immune system attacks normal tissue components as if they were invading pathogens, causing an inflammatory response. The inflammation associated with rheumatoid arthritis primarily attacks the linings of the joints. If it persists, cartilage and bone destruction can occur and the joint becomes deformed and immobile. The reason for the immune system reacting in this way is not yet fully understood, although it is thought that it may be a combination of genetic and environmental factors.

Symptoms vary from person to person and may include:

- swelling, pain and heat in the joints
- persistent fatigue
- joint stiffness (particularly in the morning)
- sleeping difficulties because of pain
- weak muscles

In general, both sides of the body are affected similarly.

How is it diagnosed?

Rheumatoid arthritis usually manifests itself over a period of a few months. However for some, the disease may appear overnight. Rapid onset does not mean the individual is at greater risk of disease progression. A thorough examination from a doctor or rheumatologist is the first step to diagnosing this disease. Further tests may include blood tests to identify the rheumatoid factor (an antibody which is present in about 80% of people with rheumatoid arthritis) and to assess the level of inflammation in the body. An X-ray may also be taken to determine whether damage to the bones or cartilage has occurred, although this is only seen in later stages of disease progression.

What are the risk factors?

Factors that increase your likelihood of developing rheumatoid arthritis are:

- Age (most likely to develop the condition between the ages of 25 and 45)
- Gender (three-quarters of sufferers are female)
- Family history of rheumatoid arthritis
- Ethnic background (Caucasians and Native Americans have a greater risk)
- Obesity



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“About two percent of the Australian population is affected by rheumatoid arthritis. ”

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What treatments are available?

There is currently no cure for rheumatoid arthritis, although progression of the disease can be slowed, the symptoms can be treated, and a person can be helped to adjust to the condition. Early management is vital in order to optimise function and minimise pain and long-term disability. Current treatments include:

- Physiotherapy – heat, cold and exercises to relieve pain and stiffness, improve joint movements and strengthen muscles.
- Rest – when there is a worsening of the joint inflammation.
- Occupational therapy – including training, advice, counselling, provision of splints, and aids such as walking aids and specialised cooking utensils (helping people to do daily activities more easily and with less pain).

Drugs (often taken in combinations) play an important part in dampening the inflammatory and autoimmune process. Drug treatments include:

- Non-steroidal anti-inflammatory drugs (NSAIDs). These dampen the inflammation, but they can have side effects.
- Corticosteroids. These may be used in more severe cases and work by suppressing the immune response.
- Disease-modifying anti-rheumatic drugs (DMARDs). These drugs can slow the disease progress, though they can be associated with serious side effects.

Diet is a factor that may influence the severity of symptoms in a sufferer. Fish oils that contain omega-3 fatty acids have been found to help reduce inflammation associated with arthritis. In some cases, surgery (for example, a knee replacement) is an option, where a joint has been badly damaged.

What research is Garvan doing in this area?

Inflammation is a sign that the body's protective mechanisms are at work: nearby blood capillaries are swelling, and fluid and immune cells are moving into damaged tissue in an effort to contain infection. However, when immune cells become overactive, such as with rheumatoid arthritis, too many move from the sufferer's blood into the damaged tissue, exacerbating the condition.

Garvan's arthritis and inflammation researchers have developed an antibody that blocks the action of one of the most important molecules, called C5a, from guiding inflammatory cells into tissue. It does this by binding to the cell surface receptor, called C5aR. It is anticipated that a therapy based around C5aR will be a significant improvement over current anti-inflammatory therapies because it acts at a different and earlier point in the inflammatory process. Garvan's C5aR antibody has already been used to completely reverse disease in mice with rheumatoid arthritis. In addition to treating rheumatoid arthritis, the new therapy may also be beneficial for psoriasis, sepsis, heart attack and transplant patients.

This discovery is being commercialised by Garvan's spin-off company G2 Therapies Ltd. A research, development and licensing agreement with Danish healthcare company Novo Nordisk enables the therapy to proceed to human clinical trials.

Further sources of information

Arthritis Australia

www.arthritisaustralia.com.au

Garvan Institute of Medical Research – how you can get involved

The Garvan Institute of Medical Research was founded in 1963. Initially a research department of St Vincent's Hospital in Sydney, it is now one of Australia's largest medical research institutions with approximately 400 scientists, students and support staff. Garvan's main research programs are: Cancer, Diabetes & Obesity, Arthritis & Immunology, Osteoporosis, and Neuroscience.

Your support makes it possible for the Garvan scientists to continue their great work. You can help by making a donation or a bequest, holding a community fundraiser or volunteering your time for Garvan. For details on how to get involved, please visit www.garvan.org.au or contact our Supporter Services Manager on (02) 9295 8110.

Education is one of Garvan's top priorities. Our Public Awareness and Community Education (PACE) Manager can visit your community group or school to give a talk on a number of science and health related topics. Garvan also offers regular tours of our facilities. For further details, visit our website or call our PACE Manager on (02) 9295 8108.

Garvan Institute of Medical Research
384 Victoria Rd Darlinghurst NSW 2010
(02) 9295 8110 www.garvan.org.au

