

MULTIDISCIPLINARY APPROACHES FOR TREATING RHEUMATOID ARTHRITIS

Abstract

Variable levels of joint deterioration are present in people with rheumatoid arthritis (RA), a chronic, inflammatory, and systemic autoimmune disease. One percent to two percent of persons between the ages of 20 and 50 globally suffer from this severe joint condition. Age, genetics, gender, and environmental factors like smoking, exposure to pollution, and employment are all chance factors. Since there is no recognised treatment for RA, the goals of treatment are to lessen pain and prevent further damage. TNF-blockade, B cell therapy, IL-1 and IL-6 blockade, among other things, are treatments for RA. Modern disease-modifying antirheumatic drugs (DMARDs) and other therapeutic modalities have changed how rheumatoid arthritis (RA) is managed, favouring more sophisticated, aggressive therapies. The ultimate goal is to stop structural joint degradation, which results in pain and functional impairment. Early DMARD treatment in conjunction with nonsteroidal anti-inflammatory drug tablets is recommended for RA, which must be detected early. Combination DMARD regimens and novel biologic drugs (interleukin [IL]-1 antagonist and anti-tumor necrosis factor [TNF] treatments) have drawn interest as potential choices for the early treatment of RA patients. These new biologic marketers and incoming nonbiologic vendors that concentrate on proteins in signalling cascades will likely transform the market for RA treatments. In spite of this, between 60 and 90 percent of arthritis sufferers take traditional medication. The effectiveness and safety of such conventional medications must be improved as a result. RA is managed using a comprehensive interdisciplinary approach to reduce pain and infection while restoring joint function. It is preferred to treat rheumatoid arthritis thoroughly.

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Rheumatologists, rehabilitation specialists, occupational therapists, physical therapists, social workers, nurses, guide therapists, podiatrists, dieticians, psychologists, career counsellors, and orthopaedic surgeons have collaborated to develop a patient-focused fitness care model that is effective on all levels.

Keywords: Rheumatoid arthritis, anti-inflammatory, multidisciplinary strategy.

I. INTRODUCTION

Small joints are initially affected by the chronic, symmetrical, inflammatory autoimmune illness known as rheumatoid arthritis (RA), which later spreads to larger joints, the skin, eyes, heart, kidneys, and lungs. In addition to the bones and cartilage of the joints being frequently harmed, the muscles and ligaments degrade. Each and every joint damage leads to deformity and bone erosive processes, both of which are frequently unbearably painful for the patient. The symptoms of RA include subcutaneous rheumatoid nodules, fatigue, fever, weight loss, joint stiffness lasting more than 30 minutes in the morning, edema, and warmth. Between the ages of 35 and 60, the ailment frequently starts, and it progresses through flare-ups and remissions.

Before the age of 16, children may develop juvenile RA, which is similar to RA but does not have rheumatoid arthritis. One to two percent of Westerners and one percent of people globally are considered to have RA. RA affects the interphalangeal and metacarpophalangeal joints, but osteoarthritis frequently affects the joints of the joints. Therefore, RA's clinical diagnosis may be distinct from osteoarthritis'. The most prevalent kind of arthritis, osteoarthritis, is not brought on by an immune disorder but rather wear and tear. The heart, lungs, and immune system are unaffected. Furthermore, unlike RA, OA often only affects one side of the body. Another impact was the brief morning nausea experienced by RA patients. Some OA sufferers report morning stiffness, which typically goes away in less than 20 to 30 minutes.

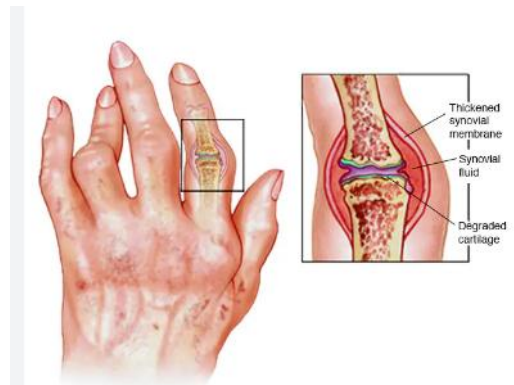


Figure 1: Rheumatoid Arthritis in Joints

Approximately 80% and 30% of people, respectively, have RA and antibodies. These alterations were visible in the joint fluid. Due to the possibility of arthritis in RA patients, joints must be resorbed and cultured. Only a few of the widely accessible drugs include sulfasalazine, chloroquine, penicillamine, sodium aurothiomalate, corticosteroids, and diclofenac sodium. However, all of these drugs have downsides and are only marginally effective. Therefore, alternative therapy should be used to treat RA.

All drugs lessened the pain when the chosen drug was used. It is necessary to identify bioactive substances that are therapeutically beneficial for RA. Both patients and doctors are anxiously anticipating innovative medicines to effectively treat RA due to the limitations and undesirable side effects of allopathic medications. Herbs, food, medications, and antibiotics are among the most commonly prescribed substances¹.

II. PATHOGENESIS

The synovium, the membrane that surrounds the joint and creates a protective sac, is where the disease process that results in rheumatoid arthritis starts. This sac holds the viscous fluid known as joint fluid. In addition to adhering, this fluid also nourishes and oxygenates the cartilage. Collagen, a structural protein that creates the body's meshwork and gives joints strength and flexibility, makes up the majority of cartilage.

An abnormal immune response eliminates the molecules in rheumatoid arthritis that cause the synovium's chronic inflammation. The joint space gets narrower as collagen gradually deteriorates, and eventually, bone loss happens. If the condition worsens to rheumatoid arthritis, the degeneration of cartilage is accelerated. The pannus, a protrusion of thick tissue, is brought on by immune system and synovium fluid buildup. additional enzymes released by Pannus break down the cartilage in the area, making it heavier and attracting additional white blood cells to keep the process going.

In addition to damaging cartilage and bones, this inflammatory process can also injure other bodily parts. Synovial fibroblasts (SF), synovial macrophages, and other inflammatory cells that invade the joint grow into a pannus-like tissue. The adjacent bone and cartilage are eventually encroached upon by this edematous and hypertrophic tissue. The joint damage is then healed by the matrix-degrading enzymes produced by the activated SFs².

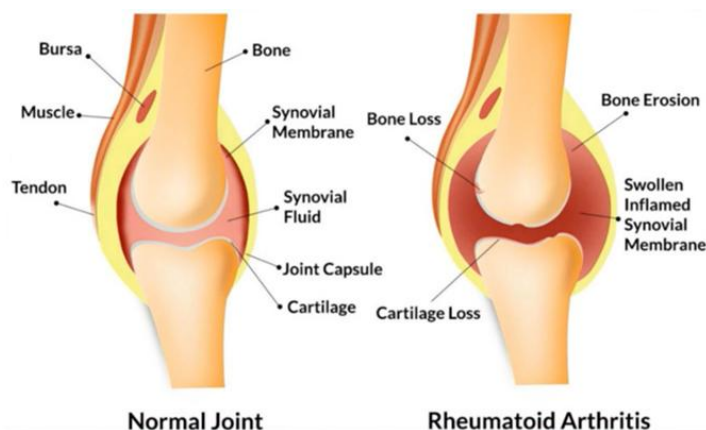


Figure 2: Normal and Arthritic joints

1. Causes: An autoimmune condition called rheumatoid arthritis is brought on by the body's immune system attacking healthy tissues. But the exact cause of this is unknown. To aid in the fight against disease, the immune system frequently creates antibodies that destroy germs and viruses. Rheumatoid arthritis causes the immune system to transfer antibodies to the joint lining rather than the tissue around it. Due to the inflammation of the joint and the thin layer of cells that covers it (synovium), harmful substances are released, causing damage to the surrounding area:

- Bones
- Bones tendons - elastic tissue between bones
- Tendons - tissues that connect bones to muscles 444 Ligaments - connect bones and cartilage Connecting tissues

If RA is not treated, these drugs have the ability to both damage and heal joints. The joint might eventually be destroyed. Numerous theories, including infections, have been proposed as to why the immune system targets the joints, but none of them have been proven³.

- 2. Signs And Symptoms Of Rheumatoid Arthritis:** Ankle edoema, splenomegaly, nail-fold lesions, vasculitis, carpal tunnel syndrome, atlantoaxial subluxation, sensorimotor polyneuropathy, bursitis nodu, scleromalacia, scleritis, joint deformity, tenderness, joint redness, preferential malaise, exhaustion, morning stiffness, joint ache, physical impairment⁴.

III.COMPLICATIONS OF RHEUMATOID ARTHRITIS

Rheumatoid arthritis is a disease, thus its pain affects more than just the body and joints. Dryness in these regions can be a symptom of Sjögren's syndrome, an inflammation of the glands in the mouth and eyes. Dry eyes might lead to bone fractures. The inflammation of the eye whites known as scleritis can seriously injure the eyes. Pleurisy, an inflammatory condition of the lungs' lining, can cause your chest discomfort when you breathe deeply, wheeze, or cough.

Nodules that are uncomfortable, scarred, and occasionally inflamed may form in the lung tissue itself. One of the most typical symptoms of pericarditis, an inflammation of the pericardium, the tissue that surrounds the heart, is chest pain that fluctuates with use whether lying down or leaning forward. Rheumatoid arthritis is associated with an increased risk of heart attack. Rheumatoid arthritis may result in a decrease in the number of red and white blood cells. The Felty syndrome, which causes the spleen to expand and increases the risk of infection, may be associated with a decrease in white blood cells.

People with rheumatoid arthritis are more likely to acquire lymphoma, especially if they frequently experience joint inflammation. Rheumatoid nodules, or skin lumps, may appear around the elbows and fingers. Nodules frequently show no symptoms, however they occasionally contract an infection. Compression of wrist nerves can result in carpal tunnel syndrome. Inflammation of blood vessels is a hazardous illness known as vasculitis, which is frequently accompanied by persistent rheumatoid arthritis. Vasculitis reduces blood supply to tissues, which causes necrosis, or tissue death. Usually, it starts with leg pain or a tiny black spot at the nail bed⁵.

Ra Factors And Determinants of Health :The cause of RA is not known. RA risk factors include environmental, biological, psychological, and behavioural variables. By reducing risk factors including obesity, depression, smoking, and overtime labour, we can aim to prevent the use of antibiotics.

V. DIAGNOSIS

It can be difficult to identify rheumatoid arthritis since there are many conditions that can cause joint pain and swelling, and because there is no known test for the condition.

1. **See GP (General Practitioner)** : During a physical examination, a doctor will evaluate your range of motion and look for swelling in your joints. Your symptoms will be brought up by the doctor. Your doctor will be able to make an accurate diagnosis if you let them know about all of your symptoms, not just the ones you believe are significant. Your doctor will advise you to consult a rheumatologist if they believe you have rheumatoid arthritis.
2. **Blood test:** To confirm the diagnosis, a physician may request a blood test. While some tests can detect symptoms, a blood test cannot confirm or exclude a rheumatoid arthritis diagnosis.

Several crucial blood tests include: The body's level of inflammation can be gauged using the Erythrocyte Sedimentation Rate (ESR)

- The C Reactive Protein (CRP) test is another examination that can be utilised to establish the quantity of whole blood. This test is provided to help rule out other possible causes for your symptoms and to provide a general assessment of your health.
- Whole blood testing can be used to identify anaemia. Anaemia is a condition where there are not enough red blood cells, which prevents the blood from carrying enough oxygen. Anaemia is a common symptom in people with rheumatoid arthritis, but the condition is not always present.
- **Rheumatoid factor and anti-CCP antibody:** a blood examination that gauges the blood's rheumatoid factor concentration. A protein called rheumatoid factor is created when the immune system targets healthy tissue. Rheumatoid arthritis affects more than 50% of people, however 1 in 20 people without the condition also test positive for high levels of the disease at the time the sickness started. The anti-cyclic citrulline peptide (anti-CCP) test is a related blood examination. The immune system also generates anti-CCP antibodies.

Rheumatoid arthritis is more common in those who test positive for CCP antibodies, but not everyone with the disease does. Patients with severe rheumatoid arthritis who test positive for both anti-CCP and rheumatoid factor could need more aggressive therapy.

- **Joint scan:** To examine the joints and any damage, a scan can be performed. These can be used to monitor your condition over time and help differentiate between different types of arthritis. The following tests can be used to identify and monitor rheumatoid arthritis:
- **X-rays:** Once you have rheumatoid arthritis, MRI scans (using powerful magnets and radio waves) are recommended.
- **Your doctor will evaluate how well you are doing at a treatment daily.** You could be required to answer questions regarding your grip strength, how you walk, eat, and dress. To determine if you have improved, the test might be repeated following treatment⁶.

VI. MULTIDISCIPLINARY APPROACHES FOR TREATMENT OF RHEUMATOID ARTHRITIS

1. TNF-blockers, such as infliximab, etanercept, certolizumab, and adalimumab, as well as IL-1 antagonist tocilizumab, B cell depletion (rituximab), T-cell co-stimulatory modulator abatacept, IL-6 antagonist tocilizumab, and IL-1 receptor antagonist anakinra, are some of the medications used to treat RA. Tocilizumab has been demonstrated to have side effects including headache, nasopharyngitis, upper respiratory tract infections, and gastrointestinal disorders.
2. **Pain relievers:** To relieve the pain caused by rheumatoid arthritis, it may occasionally be advised that you take medicines like paracetamol or a combination of paracetamol and codeine. Although this medication does not treat joint discomfort, it may help some people feel less pain.
3. **Non-steroidal anti-inflammatory drugs (NSAIDs):**Non-steroidal anti-inflammatory medicines (NSAIDs) may be prescribed by a doctor or used in addition to painkillers like paracetamol. A typical NSAID like ibuprofen, naproxen, or diclofenac can be used for this, as well as drugs known as COX-2 inhibitors like celecoxib or etoricoxib.
4. While these medications may help with pain management and joint discomfort, they cannot stop the progression of rheumatoid arthritis.
5. **Surgery:**If medical treatment is ineffective for the condition, surgery is advised. Synovectomy, tenosynovectomy, tendon realignment, reconstructive surgery, or arthroplasty, and arthrodesis are all procedures used to treat RA.
6. **Herbal Medicine Should Be Used in the Treatment of RA:** The effectiveness and safety of RA treatment is a complicated matter. Many individuals think about using herbal treatments for RA because of the side effects of modern drugs. According to research, persons with chronic illnesses like rheumatoid arthritis who don't react to contemporary treatments might think about ancient therapy. Most arthritis sufferers (60–90%) turn to traditional treatments.
7. **Neutraceuticals to treat Rheumatoid Arthritis:**Numerous phytochemicals have inhibitory, immunomodulatory, anti-inflammatory, and antioxidant properties that can lessen or postpone RA. Apigenin, curcumin, arctiin, epigallocatechin-3-gallate, gallic acid, ferulic acid, genistein, kaempferol, quercetin, and resveratrol are examples of dietary phytochemicals. Phytochemicals are secure and under strict control, and they have significant pharmacological characteristics.
8. **Complementary therapies**Many people with rheumatoid arthritis try complementary therapies such as:
 - Acupuncture
 - Chiropractic
 - Massage
 - Osteopathy

In general, there is little or no evidence that these treatments will last long.

- 9. Joint Replacement Therapy:** Some people with rheumatoid arthritis need surgery to completely or partially replace their hip, knee, or shoulder joints. The medical term for replacing a joint is arthroplasty. After months of therapy, replacing these joints involves significant surgery and days in the hospital.
- 10. Arthroscopy:** This procedure involves cutting off inflammatory joint tissues. A small skin incision is required to introduce an arthroscope, a thin tube containing a light and camera that allows the surgeon to see the injured joint. Special devices are inserted through tiny skin wounds to remove the damaged tissue. Although an overnight hospital stay is typically not necessary for this surgery, a few days off at home may be necessary.
- 11. Physiotherapy:** You can increase your muscle mass, strength, and flexibility by working with a physical therapist. If your hands or wrists are bothering you, you might want to try a hand exercise. This involves performing the exercises on your own at home and speaking with a qualified therapist in person. To lessen discomfort, a physical therapist could also apply heat, cold, or a TENS machine. A TENS machine employs a little electrical current to stimulate joint nerve endings and lessen the discomfort associated with rheumatoid arthritis.
- 12. Occupational Therapy:** If your regular tasks are being hampered by rheumatoid arthritis, occupational therapy may be able to help. Occupational therapists can offer guidance and instruction to assist you in safeguarding your joints at home and at work⁷.

VII. CONCLUSION

The chronic inflammatory illness RA can harm joints and result in permanent disability. To avoid severe harm and the loss of key organs, early identification and care are crucial. By first identifying goals and then adhering to the protocol to attain and measure goals, clinicians should think about adopting the Treat by Goals suggestions. Furthermore, quick referral to a physician can aid in improved therapy. We better comprehend the illness mechanisms as the field of molecular medicine develops, which can aid in the development of improved treatments. New medications were developed along with older ones. It turns out that determining whether people respond better to particular medications can be done by analysing the genome sequence. In addition to enabling quicker treatment, this improvement will lower the risk of infections during the trial period of finding the best medication for a patient. Which of the patients was at a higher risk of getting rheumatoid arthritis was also identified using gene sequence analysis. Therapeutic treatment may result in an improvement in RA management.

In order to influence the expression of the genes linked to rheumatoid arthritis, lifestyle and dietary modifications should be further researched as there is no known cure for the condition. Continued research is necessary to stop the spread of illness. Researchers should concentrate their efforts on developing complementary treatments that are more effective.

Thanks to a varied approach, rheumatoid arthritis management has gained increasing acceptance. Doctors, surgeons, rheumatologists, rehabilitation experts, occupational therapists, physical therapists, social workers, nurses, guide therapists, podiatrists, dieticians,

psychologists, career counsellors, and orthopaedic surgeons collaborate to accomplish all of the patient's treatment objectives. The amount of clinical effort can increase by encouraging patients to take care of themselves through a multidisciplinary approach.

X. REFERENCES

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