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Review Article

**COMPARATIVE TREATMENT FOR RHEUMATOID
ARTHRITIS BY USING DIFFERENT MEDICAL SYSTEMS**¹S. Shaheena Begum, ²Kuruva Mahesh¹M. Pharmacy, JNTUA, Department Of Pharmacology, Dr K V Subba Reddy Institute of Pharmacy, Opp. Dupadu Railway Station, NH-44
Kurnool. A.P, Phone no; 8555912457²B. Pharmacy, JNTUA, Dr K V Subba Reddy Institute of Pharmacy, Opp. Dupadu Railway Station, NH-44, Kurnool. A.P, Phone no; 8555912457**Abstract:**

Rheumatoid arthritis (RA) is a chronic autoimmune inflammatory disorder. People with RA suffer from pain, swelling, and stiffness, joint inflammation, cartilage erode. without effective treatment significant joint damage, disability, owing to chronic inflammation of joint lining. RA can be treated by allopathic, ayurvedic and homeopathy drugs and therapy. Allopathic drugs show most effective actions than homeopathic and ayurvedic drugs. ayurvedic drug only treat symptom of the disease. over the past 25 years, the management of this condition has been revolutionized, resulting in substantially higher level of disease remission^[1]

The identification of novel autoantibodies has improved diagnostic accuracy, and newly developed classification facilitate the recognition and study of the disease early in its course. Present therapies strive for early referral, early diagnosis and early start of effective therapy aimed at remission or, at the least, low disease activity, with rapid adaptation of treatment if this target is not reached. This treatment prevents progression of joint damage and optimizes physical functioning, work and social participation.^[2]

New therapeutic strategies have proved to be effective, including early and better use of synthetic disease-modifying anti-rheumatic drugs (DMARDs), mainly methotrexate. Methotrexate remains the first-line therapy of RA. In patients showing insufficient response of RA, biological agents have been demonstrated to be an effective second-line therapy. Early diagnosis is essential in order to prevent joint damage and improve the prognosis and quality of life of patients with RA.

Keywords- rheumatoid arthritis, joint swelling, DMARDs, autoimmune, ayurvedic, allopathic, homeopathic.

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INTRODUCTION:

Rheumatoid arthritis (RA) is a chronic, autoimmune disease that involves inflammation in the linings of the joint membranes and can sometimes affect internal organs. Many patients exhibit a chronic fluctuating disease that can result in progressive joint destruction and deformity. RA affects mostly women rather than men and peaks at the age of 35 to 50.

The immune system plays a crucial role in treating RA. A hyperactive immune system leads to various hypersensitive reactions, which may cause numerous derangements. A loss of normal capacity to identify self from non-self results in immune reactions against our own cells.

Autoimmune diseases like serum sickness, and pernicious anemia, are severe issues for the medical and pharmaceutical community because of unknown etiology. according to WHO 0.3 to 1% of the world population is affected by RA

The primary symptoms of RA are pain, swelling, and destruction of cartilage and bones, RA etiology is unknown but several hypotheses said that it is triggered by combinations of genetic predisposition and exposure to environmental factors like viruses.⁴¹

2.0 PATHOPHYSIOLOGY OF RHEUMATOID ARTHRITIS

The synovitis, swelling, and the joint damage that characterize active RA are the results of autoimmune and inflammatory process that involves components of both the innate and adaptive immune systems. In RA patients, the interaction of environment and genes result in loss of tolerance of self-proteins that contain a citrulline residue. These proteins are generated via post translational modification of arginine residues to citrulline residues by the enzyme peptidyl arginine deiminase. Patients with shared epitopes generate citrullinated peptides that are no longer recognized as self by the immune system, which consequently develops ACPAS against them. the exact pathophysiology is still unknown but release of certain free

2.T-cells in joints release IL-17. this cytokinin cause activation of osteoclast cell and damage the joints ..

3.TNF-ALPHA, IL-1 cause release of PROTEASE ENZYME which break cartilage.

4.WBC cells release neutrophils which cause damage to cartilage by releasing protease

3.0 CAUSES

The specific reason for RA is not yet identified. Some of causes are

1.GENETICS; presence of RA in family history increases the risk of occurrence of RA.

2.AGE: the risk of RA increases with age.

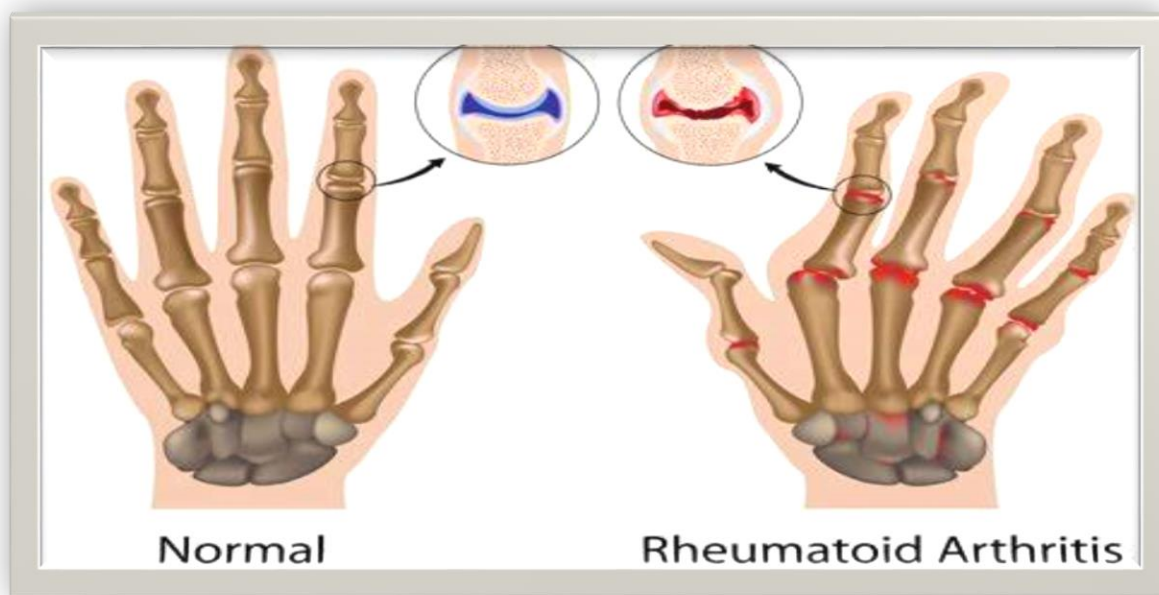


Fig :1: Hand with Rheumatoid arthritis

3. SEX: RA is most common in women.
4. SMOKING: smoking increases the occurrence of RA
5. OBESITY: over weight increase the risk of RA

4.0 TYPES OF RHEUMATOID ARTHRITIS

1. Seropositive:

Rheumatoid arthritis patients who are classified as seropositive have the presence of anti-cyclic citrullinated peptides (anti-CCPs) in their blood test results. These are also referred to as anti-citrullinated protein antibodies (ACPAs). These are the antibodies that attack the body and produce the symptoms of rheumatoid arthritis.

Between 60 and 80 % of rheumatoid arthritis patients test positive for the presence of anti-CCPs, meaning it is a reliable indicator for diagnosis.

2. Seronegative:

It is still possible for patients to develop rheumatoid arthritis without the presence of antibodies in their blood. This is referred to as seronegative type rheumatoid arthritis. Seronegative patients are those who do not test positive for the anti-CCPs or another antibody called rheumatoid factor.

Though seronegative patients lack the antibodies that help doctors diagnose the condition, they can still be diagnosed with rheumatoid arthritis in a number of ways. These include the demonstration of clinical rheumatoid arthritis symptoms, as well as X-ray results indicating patterns of cartilage and bone deterioration.

Though possible for seronegative patients to have milder rheumatoid arthritis symptoms than seropositive patients, this isn't always the case. It can still depend on a number of factors, including genetics and other underlying conditions as well.

5.0 DRUGS USED IN ALLOPATHY FOR TREATMENT OF RHEUMATOID ARTHRITIS.

Allopathic drugs show the significant effect on RA. they relief pains and swelling quickly than other system of drugs. they show action by inhibiting interleukins.

The mostly used drugs in allopathic medical system for rheumatoid arthritis is

1. METHOTREXATE
2. SULFASALAZINE
3. AZATHIOPRINE

6.0 Nonbiological drugs:

1. Immunosuppressants:^[11]

Methotrexate (MTX): This dihydrofolate reductase inhibitor has prominent immunosuppressant properties.

MECHANISM OF ACTION:

MTX is a chemotherapeutic agent and immune suppressant. it acts by inhibiting dihydrofolate reductase. this inhibition blocks the conversion of dihydrofolate to tetrahydrofolate. which is necessary for the synthesis of RNA and DNA. MTX interferes with the growth of rapidly dividing cells.

PHARMACOKINETICS:

The oral bioavailability of MTX is variable and may be affected by food. Its excretion is hindered in renal disease; therefore, not recommended for such patients. Probenecid and aspirin increase MTX levels and toxicity. Trimethoprim can add to the inhibition of dihydrofolate reductase and depress bone marrow. Oral ulceration and GI upset are the major side effects of a low-dose MTX regimen.

CONTRAINDICATED:

MTX is contraindicated in pregnancy, breastfeeding, liver disease, active infection, leukopenia, and peptic ulcer.

Sulfasalazine

It is a compound of sulphapyridine and 5-amino salicylic acid (5-ASA). It exerts anti-inflammatory activity in the bowel and is useful in ulcerative colitis. it suppresses the disease in a significant number of RA patients.

The mechanism of action is not known. Sulphapyridine split off in the colon by bacterial action and absorbed systemically appears to be the active moiety (contrast ulcerative colitis, in which 5-ASA acting locally in the colon is the active component).

The generation of superoxide radicals and cytokine elaboration by inflammatory cells may be suppressed. The efficacy of sulfasalazine in RA is modest and side effects may be unpleasant. Neutropenia/thrombocytopenia occurs in about 5–10% of patients; regular blood count monitoring is needed. Hepatitis is possible.

7.0 TNF α inhibitors:

TNF α plays a key role in the inflammatory cascade of RA by activating membrane-bound receptors (TNFR1 and TNFR2) on the surface of T-cells, and macrophages. TNF inhibitors mainly suppress macrophage and T-cell function; inflammatory changes in the joint regress and new erosions are slowed. A quicker response than nonbiological has been

obtained. Though effective as monotherapy, they are generally added to MTX when the response to the latter is not adequate or in rapidly progressing cases. Susceptibility to opportunistic infections, including tuberculosis and pneumocystis pneumonia is increased because TNF α plays an important role in combating bacterial infection, especially granulomatous infections.

Etanercept: It is a recombinant fusion protein of TNF-receptor with Fc portion of human IgG1; and is administered by S.C injection 50 mg weekly. It binds to and prevents TNF α from activating TNF receptors on the membrane of T-cells/macrophages. Pain, redness, itching, and swelling occur at the injection site and chest infections may be increased, but immunogenicity is not a

Corticosteroids:

Glucocorticoids have potent immunosuppressant and anti-inflammatory activity. They can be induced almost at any stage in RA along with first- or second-line drugs if potent anti-inflammatory action is required while continuing the NSAID \pm DMARD. Symptomatic relief is prompt and marked, but they do not arrest the rheumatoid process, though joint destruction may be slowed and bony erosions delayed. Long-term use of corticosteroids carries serious disadvantages. Therefore, • Either low dose (5–7.5 mg prednisolone or equivalent) are used to supplement NSAIDs. Once used in this manner, it is difficult to withdraw the steroid—exacerbation is mostly precipitated and the patient becomes steroid-dependent. • Or high doses are employed over short periods in cases with severe systemic manifestations (organ-threatening disease, vasculitis) while the patient awaits a response from a remission-inducing drug.

8.0 Homeopathic drugs used for rheumatoid arthritis

Homeopathic drugs used for rheumatoid arthritis
Homeopathic medicines are of natural origin and devoid of any toxins. Homeopathic treatment can provide noticeable improvement in symptoms like joint pain, swelling, and stiffness. It can decrease the frequency and intensity of your pain markedly, improve your range of motion, and prevent any deformity of joints and extra-articular (other than joints) complications if opted in the very beginning of the complaint. It can limit further progression of the disease. In mild to moderate cases, if the prescribed remedy course is followed regularly, cure might occur in many of the cases. In severe cases with joint

deformity, cure may not be possible but homeopathy promises great help in symptomatic relief here and checks further joint damage. As homeopathic treatment has individualized approach in each case, the remedy selection and dosage depend on factors like severity of symptoms, age of patient, chronicity of complaint or any parallel complex symptoms involved.

Homeopathy optimises rather than suppresses immune system

As rheumatoid arthritis is an autoimmune disease, which means the body's own Défense cells start destroying their own healthy tissues, it is known to be caused by overactive immune system. Homeopathic treatment can successfully offer help in optimizing the overactive immune system to reduce inflammation and gradually reduce the progression of chronic ailments. Homeopathy in no way suppresses the immune system.

9.0 Non-habit-forming medicines, no harmful effects^[12]

Homeopathic remedies are not habit-forming and can offer effective treatment in chronic cases of rheumatoid arthritis with no negative response. These medicines can be taken along with conventional medicines. Gradually, homeopathic medicines can reduce the dependency on harmful conventional drugs. Homeopathic medicines do not carry the risk of any harmful after-effects. Rheumatoid arthritis treatment in conventional medicine includes DMARDs (Disease-modifying anti-rheumatic drugs), NSAIDs (non-steroidal anti-inflammatory drugs) and steroids which have side effects and can lead to other complex conditions. Though these medicines can be taken in case of intense pain and severe inflammation, their long-term use should be avoided.

Homeopathic Medicines for Rheumatoid Arthritis

The top medicines for the treatment of rheumatoid arthritis are,

Rhus Tox, Apis mellifera Bryonia, ANTIMONIUM CRUDUM Actaea Spicata, Arnica, Ledum Pal, CALCAREA CARBONICA and Sanguinaria Can.

1. Rhus Tox –For painful, stiff joints better from movement^[13]

Rhus Tox helps to relieve joint pains and stiffness by reducing joint inflammation. Persons needing it

mainly have joint stiffness in the morning and also after a period of inactivity. Warm applications and motion of affected joint bring relief. Massaging the joint also offers relief.

When To Use Rhus Tox?

The key indication for using this medicine is pain and stiffness in joints which gets worse by rest and better by movement.

How to use Rhus Tox?

Though Rhus Tox may be used in different potencies, it is best to begin with 30C potency. Rhus Tox 30C can be taken two to three times a day as per severity of problem. Higher potencies like 200C and 1M can also be considered afterward but only under the supervision of homeopathic expert.

2. Apis Mellifera – For reducing swelling in joints ^[15]

Apis Mellifera is a well-indicated medicine for cases where joint is highly swollen. Along with this the joint is red, and inflamed. Joint pains which are mainly burning, stinging type are also well treated with Apis. Joint is also sensitive to touch.

When To Use Apis Mellifera?

This medicine is recommended when there is intense swelling in joint along with redness, heat and burning, stinging pains.

How to use Apis Mellifera?

Apis Mellifera 30C can be used once or twice a day.

10.0 MANAGEMENT OF RHEUMATOIDRTHRITIS (AAMAVATA) BY AYURVEDIC TREATMENT ^[20]

Rheumatoid Arthritis (RA), according to modern medicine, and AAMAVATA according to Ayurveda, has an etiological and clinical relationship. AAMAVATA is a disease complex of which RA is a part. A comparative study of the pathophysiology of this disease by both systems reveals that modern medicine has investigated the mechanism of inflammation and has developed an offense strategy to control it. Ayurveda follows a defense strategy and it focuses its search on the etiological process, where disequilibrium at a higher level of physiology affects the gastrointestinal tract, causing an immune response that results in inflammation. Understanding the pathophysiology of both systems will help the treating physician to institute a dual treatment plan of modern medicine's offense strategy and Ayurvedic medicine's defense strategy at appropriate stages of the disease.

Treatment of RA –AAMAVATA

Goals of treatment

Patients and physicians should begin working toward achieving these three sets of goals simultaneously to treat RA or AAMAVATA.

- Short-term: Relieving pain and restoring joint function
- Intermediate term: Controlling inflammation, which is the core of the disease pathogenesis; protection of joints; and preserving body and joint function
- Long-term: Achieving remission, preventing complications, and minimizing the toxic effects of medicines.

In order to be successful, the treatment plan for RA must implement the most effective known offense and defense strategies.

The offense strategy for the treatment of RA or AAMAVATA

Surgery:

Patients who develop deformities and loss of function require the use of surgery to regain function. Synovectomy has been used, but since the advent of stronger anti-inflammatory agents and better control of RA, it is being used much less.

Défense strategy for management of RA-AAMAVATA

Before executing the defense strategy, healthcare providers should keep in mind two fundamental points: In contrast to the offense strategy of modern medicine, there is no target in the defense strategy and the tools and processes employed in the defense strategy of Ayurveda have multiple effects. These effects are usually weak, but their cumulative effect is powerful. The second point to take into account is Ayurveda's concept of the six stages of disease. In the first four stages, accumulation, aggravation, dissemination, and localization of Doshas occur. There are no clinical manifestations and symptoms are vague. Characteristic symptoms appear during the fifth and sixth stages of manifestation and disruption of the disease. A health-care provider who is an expert in identifying vibrato, or disequilibrium of Doshas in the body can reestablish equilibrium and prevent disease manifestations in the first four stages of disease. When symptoms appear in the last two stages,

manifestation and disruption, both the offense and defined strategies are to be employed appropriately.

11.0 Based upon the Ayurvedic concepts of pathophysiology discussed earlier, the Défense strategy consists of:

1. Balancing the Doshas.
2. Increasing the digestive and metabolic fires, or Agni.
3. Stopping the formation of Aama at different levels.
4. Increasing digestion and excretion of AAMA
5. Restoring the damaged intestinal mucosa and absorption.

Since Ayurvedic procedures and therapies have multiple effects, management will be enumerated and described by the therapy rather than the effect.

12.0 Recommended foods or Pathya;

1. Warm water medicated with Panchkula (Papale, Papillomata, Chanya, Chitarra, Shanthi) in small quantities at a time helps in digestion and disintegration of Aama.
2. Barley, horse gram, Kodo millet, and the red variety of rice are recommended. These foods are light and easy to digest. Barley kernels and other products made from barley lower inflammatory markers.
3. Green leafy vegetables and fruits contain a variety of polyphenols, bioflavonoids, catechins, carotenoids, vitamin C, riboflavin, vitamin E, and low molecular weight compounds. These constituents have antioxidant, fibrinolytic, and anti-inflammatory characteristics. Vegetables preferably with a bitter taste like bitter melon

(Momordica Charania), Neem (Azadirachtolide indica), Patola or luffa, and Gocher (Tribulus terrestris) are recommended.

4. Spices like ginger, turmeric, and garlic help to add Flavors to these dishes and also have antimicrobial, anti-inflammatory, and analgesic properties besides their Agni-promoting impact.
5. Wine-old wine, Aava and Arishta.
6. Meat of Lava Pakshi-Jungle bush quail (Pediculate asiatica) prepared with traditional buttermilk

Foods to avoid or APATHYA:

The majority of allergens come from dairy and animal products, which cause an increased production of pro-inflammatory prostaglandins.

1. Cold and impure water
2. Lentils like Urad and heavy foods.
3. Vegetables like ARABI or eddo (COLOCACIAANTITUOTUM) and Indian spinach (Basella rubra).
4. Fish and seafood.

Panchakarma therapy: For increasing the Agni, excretion of AAMA, and removal of vitiated and accumulated Doshas, purification or SHODHANA and pacifying or Shamana treatments are given. This category of treatment comes under PANCHAKARMA therapy. It consists of

1. Medicated or retention enemas.
2. Medical emesis.
3. Medical purgation
4. Nasal medication.
5. Bloodletting.

13.0 COMPARISSION BETWEEN ALLOPATHIC, AYURVEDIC, AND HOMEOPATHIC SYSTEMS IN TREATMENT OF RHEUMATOID ARTHRITIS.

| TYPES | HOMEOPAATHIC | ALLOPATHIC | AYURVEDIC |
|----------------------|--|--|--------------------|
| MECHANISAM OF ACTION | Homeopathy plays a potential role in the management of rheumatoid arthritis (RA) by providing individualized treatment based on the principles of "like cures like" and stimulating the body's innate healing abilities. | TNF α plays a key role in the inflammatory cascade of RA by activating membrane bound receptors (TNFR1 and TNFR2) on the surface of T-cells, macrophages, etc | Relief symptoms |
| ADVANTAGES | No toxic reactions occur | Quick on set of action | No toxic reactions |

LIST OF ABBREVIATIONS**ABBREVIATIONS****LIST**

RA: RHEUMATOID ARTHRITIS
 MTX: METHOTREXATE ALPHA
 TNF: TUMOUR NECROSIS FACTOR
 NSAIDS: NON-STEROIDAL ANTI-INFLAMMATORY DRUGS
 DMARDS: DISEASE MODIFYING ANTIRHEUMATIC DRUGS

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