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A REVIEW ON NUTRITIONAL MANAGEMENT IN RHEUMATOID ARTHRITIS

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ABSTRACT

Rheumatoid Arthritis is a autoimmune disease which affects about 1% of the global population and is caused by increase in age, smoking, obesity and various other causes which create complications like osteoporosis, Rheumatoid Nodules, Infection, Dry eyes. There are various allopathic medicine available like DMARDS, NSAIDS, Glucocorticoids, Analgesic but they have a number of side effects. To overcome this problem, we move towards nutritional management by fruits, herbs, different dietary intervention

KEY WORDS:- *Rheumatoid Arthritis, Autoimmune Disease, Nutritional Management, Complication And Side Effects, Alternative Therapies*

INTRODUCTION

Rheumatoid arthritis (RA) is a chronic, progressive autoimmune disease characterized by persistent inflammation in the joints, leading to painful deformities, swelling, and stiffness, particularly in the feet, fingers, wrists, and ankles. This condition arises when the immune system, designed to protect the body from infections and viruses, mistakenly attacks healthy tissues, primarily the synovium, the inner lining of the joint capsule.

In a healthy joint, the synovium produces synovial fluid, a thick substance that lubricates and protects the joint. This fluid allows for smooth movement between the bones, each covered by a thin layer of cartilage acting as a cushion, preventing bones from rubbing against each other. Tendons, strong cords connecting muscles to bones, facilitate movement by pulling the bones in specific directions. The joint capsule envelops and stabilizes the joint, preventing excessive movement.

RA disrupts this delicate balance. The immune system's misguided attack on the synovium triggers inflammation, a natural response that typically occurs to heal the body after an injury or infection. However, in RA, the inflammation persists and targets healthy joints, leading to swelling, redness, pain, and increased heat in the affected areas. The chronic nature of this inflammation can result in substantial damage to joints, cartilage, and nearby bones if left untreated.

One hallmark of rheumatoid arthritis is its symmetrical impact on joints, affecting both sides of the body equally. Although it may initially manifest in a limited number of joints, RA commonly targets the wrists, hands, elbows, and ankles. The consequences of this autoimmune attack extend beyond immediate discomfort, as it can lead to the formation of painful deformities and joint instability.

The joint capsule, responsible for maintaining joint integrity, can become stretched and lose its ability to hold the joint in its proper position when inflammation subsides. This instability contributes to ongoing pain and hinders joint function. Moreover, chronic inflammation can lead to irreversible joint damage, impacting the overall quality of life for individuals living with RA.

Effective management of rheumatoid arthritis often involves a multifaceted approach. Traditional treatments include disease-modifying antirheumatic drugs (DMARDs), nonsteroidal anti-inflammatory drugs (NSAIDs), glucocorticoids, and analgesics. However, these medications may carry side effects, prompting a growing interest in complementary strategies.
Nutritional interventions, such as incorporating anti-inflammatory foods and supplements, have gained attention for their potential in alleviating symptoms and supporting overall joint health. Additionally, lifestyle modifications, including regular exercise and stress management, are integral components of a comprehensive RA management plan.

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In conclusion, understanding the intricate dynamics of rheumatoid arthritis sheds light on the complexities of this autoimmune condition. As researchers continue to explore innovative therapies and interventions, a holistic approach that combines medical treatments, nutritional support, and lifestyle modifications offers a promising avenue for enhancing the well-being of individuals navigating the challenges posed by RA.[7]

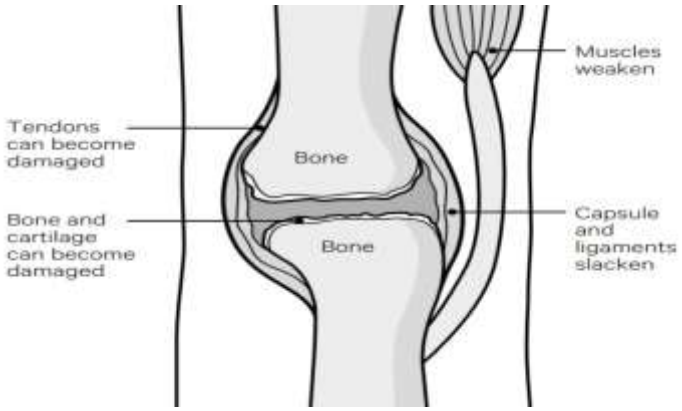

Figure 1. A Joint affected by Rheumatoid Arthritis

As many chronic diseases, the history of rheumatoid arthritis started around 1500 BC when Ebers Papyruralies describes a several condition similar to rheumatoid arthritis. Several reports suggest that mommies from different eras have deformities that are pathognomonic of arthritis, however, was not until later 1800 where this chronic condition was named by Garrod rheumatoid arthritis, replacing the terms arthritis deformans and rheumatic gout. Thomas Sydenham and later on, Beauvais pointed out that Rheumatoid Arthritis has a chronic progressive.course especially in the tendon sheaths and bursa causing damage of the bone and cartilage.[3]

Types of Rheumatoid Arthritis

Seropositive rheumatoid arthritis: If your blood tests positive for the protein called Rheumatoid Factor (RF) or the antibody anti-Cyclic Citrullinated Peptide (anti-CCP), it means your blood has antibodies that can attack to your body might be actively response to your normal tissues. Having these proteins doesn't really mean you have Rheumatoid arthritis. Notwithstanding, in the event that you do, it can assist specialists with distinguishing the sort. [6]

Seronegative Rheumatoid Arthritis: People who test negative for Rheumatoid Factor (RF) and anti-CCP in their blood can still have Rheumatoid arthritis. Diagnosis does not depend on just these tests. Your Primary Care Physician (PCP) will also take into consider clinical symptoms, X-rays, and other laboratory tests. People who test negative for RF and anti-CCP tend to have a milder form of Rheumatoid arthritis than those who test positive for Rheumatoid Factor (RF).[6]

Juvenile Rheumatoid Arthritis: Juvenile rheumatoid arthritis, also called as juvenile idiopathic arthritis is the most common type of arthritis in children. It is a swelling of the joints that is characterized by warmth and pain. Arthritis can be short-term, enduring only half a month or months and then disappearing - or it may be chronic and last for months, years or even a lifetime. [6]
Rheumatoid Arthritis can be classified as: [15]

1) Palindromic rheumatoid arthritis
2) Juvenile rheumatoid arthritis
3) Rheumatoid spondylitis
4) Other types of arthritis
5) Osteoarthritis:
   a. Primary osteoarthritis - It occurs in varied parts of body.
   b. Secondary osteoarthritis - It occurs after an injury.
6) Ankylosing spondylarthritis
7) Infectious arthritis:
   a. Supportive arthritis
   b. Tuberculous arthritis
   c. Lyme arthritis

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d. Viral arthritis
8) Gout and gout arthritis
Signs and symptoms of autoimmune disorder may include:
• Delicate, warm, enlarged swollen joints
• Joint stiffness that is typically worse in the mornings and after inactivity
• Fatigue, fever and loss of appetite
Early rheumatoid arthritis tends to affect smaller joints first and particularly the joints which attach fingers to hands and toes to feet. As the disease getting worse, symptoms often spread to the wrists, knees, ankles, elbows, hips and shoulders. In some cases, symptoms occur in the same joints on both side of your body. Areas that may be affected includes: [6] Skin, Eyes, Lungs, Heart, Kidneys, Nerve tissue, Bone marrow, Blood vessels

Symptoms affecting the joints [6]: Rheumatoid arthritis mainly affects the joints. It can affect any joint in the body, although the small joints in the hands and feet are often the first to be affected. Pain, Stiffness , Swelling, warmth and redness

Diagnosis [3]:
You will be diagnosed with rheumatoid arthritis based on:
- your symptoms
- a doctor examining you and your joints in person
- The results of x-ray, scans and blood tests

Blood Tests [8]:
There is no single blood test that confirms you have rheumatoid Arthritis. However, there are a few tests that can show possible signs of the condition. Erythrocyte sedimentation rate (ESR): This test shows the level of inflammation in your body. C-reactive protein (CRP) test: This test also helps to measure inflammation in your body. Full blood count: A full blood count measures how many red blood cells Are in your blood.

Seropositive and seronegative (rheumatoid factor and Anti-CCP antibodies) [8]
If you have been diagnosed with rheumatoid arthritis, you may have been told that you are seropositive or seronegative. If you're told you're seropositive, it means that you have one or both Antibodies present in your blood: Rheumatoid factor (RF), Anti-cyclic citrullinated peptide (anti-CCP). About 85% of people with rheumatoid arthritis have one or both Antibodies.

Disease Activity Score (DAS28) [14]
A Disease Activity Score is a scoring System that helps your doctors see how your condition affects your Body, and how it reacts to treatment. For rheumatoid arthritis, this assessment is called the DAS28.

Scans [3]
You may also have some scans to check if you have any joint inflammation or damage. These include: X-rays, Ultrasound scans, Magnetic resonance imaging (MRI) scans, Computerised tomography (CT) scans, Assessing your physical ability [3]

CAUSES AND RISK FACTOR OF RHEUMATOID ARTHRITIS: [4]
Rheumatoid arthritis is a chronic autoimmune disorder where the immune system attacks joint tissues, potentially affecting the heart, lungs, nerves, eyes, and skin. Genetic factors increase susceptibility, with environmental triggers like infections playing a role in onset. Age, Sex, Smoking, Early Life Exposures, Obesity

PATHOGENESIS OF RHEUMATOID ARTHRITIS
Rheumatoid arthritis is a chronic inflammatory joint disorder influenced by genetic and environmental factors. Immune cells, particularly macrophages and T cells, produce cytokines leading to synovial hyperplasia, cartilage destruction, and bone erosion. Autoantibodies contribute to diagnosis and prognosis. [2,3]

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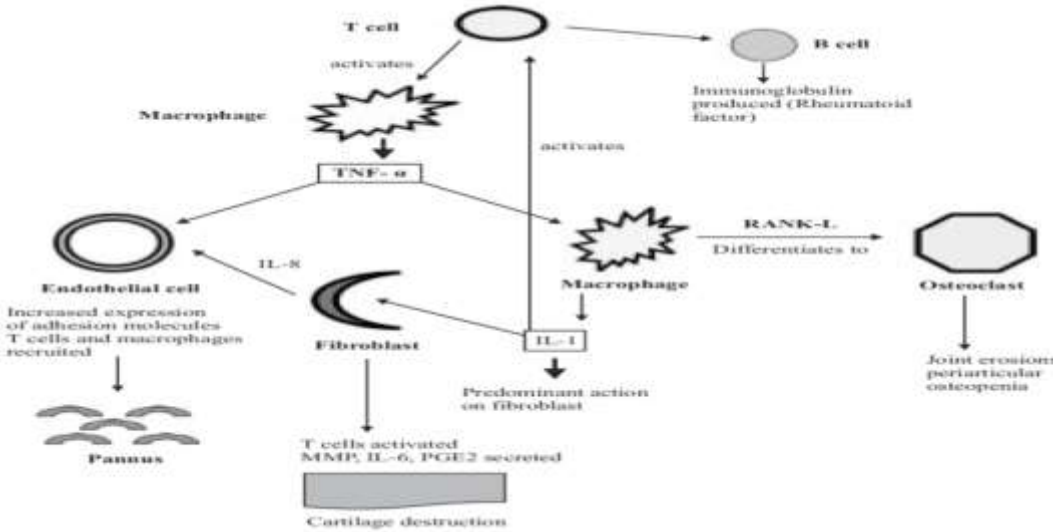

Figure 2. Rheumatoid Arthritis Pathogenesis

ALLOPAPATHIC REMEDIES: [1,12]

1) Disease-modifying anti-rheumatic drugs (DMARDs).
   - Hydroxychloroquine
   - Methotrexate
   - Sulfasalazine
   - Azathioprine
   - Lefludomide
2) Biologic response modifiers (a type of DMARD)
3) Glucocorticoids
4) Nonsteroidal anti-inflammatory medications (NSAIDs)
5) Analgesics (painkillers)
6) Janus Kinase (JAK) Inhibitor
   - **Surgery includes:**
     1) Joint Replacement , Arthrodesis, Synovectomy

NUTRITIONAL MANAGEMENT

Rheumatoid arthritis (RA) is a pervasive autoimmune disorder affecting 1% of the global population. Beyond joint inflammation, it extends systemically, impacting organs and diminishing life quality. Immune attacks cause pain, swelling, and stiffness, accompanied by fatigue and unpredictable flare-ups. The chronic nature burdens daily activities, and increased morbidity strains healthcare systems. Targeted therapies like DMARDs and biologics offer relief, emphasizing the need for early intervention. RA requires a collaborative effort to explore innovative treatments, enhance support systems, and improve overall quality of life for those grappling with this complex condition.

Dietary interventions in Rheumatoid Arthritis [5]: Research highlights a crucial link between altered gut microbiota and Rheumatoid Arthritis (RA) progression. Dysbiosis in RA patients' gut microbiota triggers immune responses leading to chronic inflammation. Rheumatologists endorse dietary interventions, including supervised fasting and plant-based approaches like vegan or Mediterranean diets, to manage RA. Medically supervised fasting resets the immune system, while anti-inflammatory-rich diets alleviate symptoms. Long-term adherence to these dietary plans improves RA symptoms, emphasizing the need for a holistic approach alongside medication to address the intricate relationship between gut microbiota, inflammation, and immune dysregulation in RA patients.

Seven days fasting followed by vegan diet [5]: Subtotal fasting, a 7-10 day approach limiting nutrients, demonstrates promise in managing Rheumatoid Arthritis (RA). It reduces CD4 T cell activation, addressing the chronic inflammation characteristic of RA. Caution is advised, and medical supervision is crucial.

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Vegan Diet: Vegan diet, excluding animal products, may aid Rheumatoid Arthritis remission by reducing immune reactivity to excluded antigens. [5]

Mediterranean Diet: Mediterranean diet contains high amount of oleic acid, omega-3 fatty acids, unrefined carbohydrates, and phytochemicals. [5]

Elemental Diet: A groundbreaking trial by Podas et al. suggests the elemental diet's efficacy in managing Rheumatoid Arthritis, providing a less immunogenic alternative to conventional pharmacotherapy. [5]

Elimination Diet: Elimination diet targets food antigens, moderates rheumatoid arthritis symptoms via gut-immune interaction. Dietary Fibres and Whole Grains, Fruits, Spices[5]

Synbiotics: Synbiotics, combining probiotics and prebiotics, show promise in enhancing gut health. In Rheumatoid Arthritis, studies suggest Lactobacillus casei, a probiotic, may reduce pro-inflammatory markers. The link between gut health and systemic inflammation underscores synbiotics' potential to influence conditions beyond the gut.[7]

Herbs: Ashwagandha, Ayurvedic anti-inflammatory herb, inhibits NF-xß, suppresses certain cytokines in vitro. [7]

CONCLUSION

Dietary interventions, such as vegan, Mediterranean, elemental, and elimination diets, show promise in managing Rheumatoid Arthritis (RA) by reducing inflammation. Plant-based diets may alleviate symptoms by eliminating potential triggers, while the Mediterranean diet's anti-inflammatory properties benefit RA. However, caution and professional guidance are essential due to individual variability in RA responses to dietary changes.

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