rheumatoid **ARTHRITIS**

Inflammation in Rheumatoid Arthritis

By Tammy Wolhuter, registered dietitian(SA), Anne Till & Associates

Rheumatoid arthritis (RA) is a chronic, inflammatory and autoimmune disorder that affects the joints in a polyarticular manner and is more severe than osteoarthritis (OA). The peak onset of RA is between the age of 20 and 40 years, where numerous remissions follow its onset.

Chronic inflammation is self-perpetuating and may last for weeks, months or even years. It may develop as the result of a recurrent or progressive acute inflammatory process or from low-grade, smoldering responses that fail to evoke an acute attack. The influx of macrophages and lymphocytes is characteristic of chronic inflammation.

Medical management

Controlling inflammation causing pain in RA is the cornerstone of treatment. Certain drugs are prescribed for RA, but along with these come significant side effects. Surgical treatment may be considered if pharmacological and non-pharmacological treatment cannot control pain or maintain acceptable levels of functioning.

Non-pharmacological treatment

Exercise: Physiotherapy and occupational therapy should be part of the treatment regimen for RA patients. Fatigue is a common symptom experienced in patients with RA, which may be extreme and persistent. An average of 56.9% of patients with RA are affected by fatigue. Non-pharmacological interventions for fatigue include rest, relaxation, exercise, education, counselling and rehabilitation. Low-impact aerobic exercise (e.g. walking, cycling, jogging) has been proven to be an effective means of managing fatigue in RA. In addition to aerobic exercise, muscle conditioning and flexibility training play a pivotal role in improving joint mobility, and 1.5-3 hours of exercise each week is recommended. Exercise in patients with RA also helps to prevent rheumatoid cachexia, which otherwise leads to weakness and loss of function, hastening morbidity and mortality.

Diet: Since inflammatory processes are linked to free radical production, oxidative stress and consequent immune response, reducing and preventing free radical production through diet is important for patients with RA. Oxidative stress - and consequent inflammation - is caused by a hypercaloric diet, an inadequate intake of antioxidant nutrients and a sedentary lifestyle, resulting in an overabundant supply of glucose and fatty acids and, in turn, excessive generation of reactive oxygen species through the mitochondrial electron-transport chain.

Dietary guidelines which assist in the prevention of oxidative stress

A diet low in inflammation-inducing molecules (saturated and trans fats; meat; processed foods; dairy products; sugars) and high in anti-inflammatory molecules (Omega-3 fatty acids) in the form of fish oil or dietary fatty fish; virgin olive oil, nuts and seeds; plant fibres, fruit and vegetables which contain vitamins and plenty of antioxidants) is effective in reducing the inflammatory response characteristic of RA. Abstaining from smoking and modest, if any, alcohol intake is also recommended in order to prevent oxidative stress.

Nutritional supplements

Omega-3 fatty acids: (Ω-3 FAs) have been proven to reduce the synthesis of aggressive inflammatory response cytokines by interfering with the availability of omega-6 (Ω-6) and arachidonic acid (AA) for eicosanoid production. Cytokines are produced by Ω-6 FAs found in vegetable oils, which are commonly found in the Westernised diet. By increasing the amount of Ω-3 FAs and reducing the amount of Ω-6 FAs in the diet the inflammation seen in RA is reduced. Ω -3 FAs in the essential form of fish oil providing 2.7g of Ω-3 eicosapentanoic acid (EPA) and 1.8g of n-3 docosahexanoic acid (DHA) have proven to assist with the reduction of inflammation and fatigue in patients with RA. Ω-3 fatty acids can be used as an adjunct to conventional drug therapies for RA.

Gamma-linolenic acid (GLA) is an Ω-6 fatty acid found in the oils of black currant, borage and evening primrose and can be converted into the anti-inflammatory PGE_1 or into AA, which is a precursor of the inflammatory PGE_2. Due to the competition between Ω-3 and Ω-6 FAs for the same enzymes, the relative dietary contribution of these fats appear to affect which pathways are favoured. When the diet is high in Ω-3 FAs, the enzymes favour the Ω-3 pathway, allowing the body to use GLA to produce PGE_1. This anti-inflammatory PG may relieve pain, morning stiffness, and joint tenderness. Two to three grams of GLA per day is the current recommended dosage.

Rose hip: Due to the positive findings for the use of rose hip powder in patients with OA, which inhibited chemotaxis of neutrophils and lowered C-reactive protein, a randomised, double-blind, placebo-controlled study was recently performed by Willich *et al,* (2009) in order to evaluate the efficacy of rose hip powder on symptoms in patients with RA. The study took place over six months, where patients on treatment with rose hip powder experienced a significant reduction in erythrocyte sedimentation rate (ESR). Rose hip is rich in bioactive polyphenols (antioxidants), namely galactolipid, suggesting an anti-inflammatory action, which is evident in this study due to the reduction in ESR. It is suggested that antioxidants can prevent symptoms of RA to some extent by modifying cartilage destruction.

Conclusion

Although medication may be required for patients with RA, controlling inflammation through lifestyle modification will help to improve quality of life.

References available on request.