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TREATMENT OF OSTEOARTHRITIS THROUGH VARIOUS ALTERNATIVE THERAPIES

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A B S T R A C T

Osteoarthritis is a heterogenous group of conditions that lead to joint symptoms and signs which are associated with defective integrity of articular cartilage, in addition to related changes in the underlying bone at the joint margins. According to the World Health Report 2002, osteoarthritis is the 4th leading cause of year lived with disease at the Global level. By 2030, a projected 67 million people will have doctor diagnosed arthritis around the world. In India the incidence of osteoarthritis is as high as 12 percent of the population. This high frequency of osteoarthritis in India is the consequence of its prevalence among women who fall victim to it. Osteoarthritis affects both men and women. Management of osteoarthritis through diet is very challenging because the strongest risk factor for osteoarthritis, particularly of the knee, is overweight and obesity. Nutritional management seeks to ensure a well balanced diet and to control excessive body weight and the painful pressure on weight-bearing joints. Therefore, a variety of complementary therapies have also been proposed as a solution to managing pain in osteoarthritis, including topical aids, manipulative therapies, and acupuncture.

INTRODUCTION

Osteoarthritis is defined as "A heterogenous group of conditions that lead to joint symptoms and signs which are associated with defective integrity of articular cartilage, in addition to related changes in the underlying bone at the joint margins" (Symmons *et al.*, 2003) It is also referred to as osteoarthritis, degenerative joint disease, hypertrophic arthritis, degenerative disc disease and generalized osteoarthritis (West, 2002). Osteoarthritis is widespread in middle to older aged people.

The cause of osteoarthritis are largely unknown but various factors such as aging, obesity, heredity, injury or overuse and joint trauma, muscle weakness and other diseases and type of arthritis seem to be the predisposing factors Dicesare PE, Abramson SB (2005). Clinical characteristics are joint pain, tenderness, limitation of movement, crepitus (crackling sound), occasional effusion and variable degrees of total inflammation, which is generally mild there are no systemic symptoms. There are two kinds of osteoarthritis – primary and secondary. While primary osteoarthritis is a result of old age and is thought of as "wear and tear" osteoarthritis, secondary osteoarthritis is a result of a disease or an injury, which, in turn leads to it. Osteoarthritis mainly affect the hands, and diarthrodial, weight-bearing joints such as the knees, hips, and spine (Woolf and Pfleger, 2003)

The Global Burden of Disease 2000 study, published in the World Health Report 2002, estimates that osteoarthritis is the 4th leading cause of year lived with disease at the Global level. The World Health Organisation (WHO) estimates that 70 million Indian are its victims. Osteoarthritis is so common in India that it beats many other diseases like Diabetes, AIDS, Cancer and Hypertension.

An elderly person suffering from osteoarthritis should be careful to avoid being overweight and obese since excessive body weights adds stress to their joints which are already painful. A weight reduction programme should be instituted with osteoarthritis. Nutrition guidelines for them include achievement of normal weight, supplementation with glucosamine and chondroitin sulfate are believed to be ameliorate the symptoms of osteoarthritis by reducing inflammation and by aiding in the restoration of normal cartilage (Jackson, 2004). Large doses of dietary antioxidants, including vitamin C, the α-tocopherols (Vitamin E), β-carotene, selenium and good multivitamin with trace minerals can be effective in

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osteoarthritis management. Darlington LG, Stone TW (2001).

According to (Gopalan, 2002), several strategies such as dietary diversification, supplementation, food fortification, genetic modification, promoting community and home gardens and nutrition education, have been worked out and implemented to control health problems of the vulnerable population especially elderly population in the community and also suggested that the food based approach is more durable and sustainable than a drug based approach. Amirthagowri *et al.*,(2009) a variety of complementary therapies have also been proposed as a solution to managing pain in osteoarthritis, including topical aids, manipulative therapies, and acupuncture (Robbins, 2000).

COMPLEMENTARY AND ALTERNATIVE MEDICINES (CAM)

1. COMPLEMENTARY THERAPIES

When conventional medical treatment doesn't provide sufficient pain relief, people are more likely to try complementary and alternative therapies to treat osteoarthritis. Since few complementary therapies have been extensively studied in clinical trials, it's difficult to assess whether these treatments are helpful for osteoarthritis pain (Hunder, 2006). There are other complementary and alternative therapies under investigation. A variety of complementary therapies have been proposed as a solution to managing pain in osteoarthritis. These include:

Reconstructive Therapy/Prolotherapy - In prolotherapy injections of natural substances such as dextrose, glycerin, and phenol are administered in order to stimulate the growth of connective tissue. This strengthens weak or damaged joints, cartilage, ligaments, and tendons. Degenerative Arthritis, lower back pain, torn ligaments, carpal tunnel syndrome, and other conditions are treated through this (www.Kandmool.com)

Acupressure and Acupuncture - Acupuncture is a treatment based on Chinese medicine. According to Chinese alternative medicine any kind of pain or disease occurs when vital energy pathways are blocked. Treatment is done to remove these blocks and improve energy flow (www.Kandmool.com)

During acupuncture, tiny needles are inserted into the skin at precise spots by a licensed acupuncture therapist. According to experts, insertion of needles may trigger natural painkiller in body. Practitioners believe the needles free or redirect the body's energy in order to relieve pain. Scientists think the needles stimulate the release of natural, pain-relieving chemicals produced by the nervous system (National Institute of Arthritis and Musculoskeletal and Skin Diseases)

A large study supported by the National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS) and the National Center for Complementary and Alternative Medicine (NCCAM) revealed that acupuncture relieves pain and improves function in knee osteoarthritis, and it serves as an effective complement to standard care (Berman *et al.*, 2004)

A Cochrane review found that while acupuncture leads to a statistically significant improvement in pain this improvement is small and of questionable clinical significance (Manheimer *et al.,* 2010). Acupuncture does not seem to produce long-term benefits. Acupressure is safer than acupuncture, with no insertion of needles (Wang *et al.,* 2008)

Acupuncture can be safe if we select a reputable practitioner. Risks include infection, bruising and some pain where needles are inserted into your skin (Ehrlich GE, 2008)

Massage - In this pain-relief approach, a massage therapist will lightly stroke and/or knead the painful muscles. This may increase blood flow and bring warmth to a stressed area. However, arthritis-stressed joints are sensitive, so the therapist must be familiar with the problems of the disease (National Institute of Arthritis and Musculoskeletal and Skin Diseases)

Hydrotherapy - Hot and cold hydrotherapy will increase circulation to the joint and surrounding tissues. Heat or cold (or a combination of the two) can be useful for joint pain. Heat can be applied in a number of different ways - with warm towels, hot packs, or a warm bath or shower - to increase blood flow and ease pain and stiffness. In some cases, cold packs (bags of ice or frozen vegetables wrapped in a towel), which reduce inflammation, can relieve pain or numb the sore area (John J. Swierzewski and Stanley J. Swierzewski, 1998-2011; National Institute of Arthritis and Musculoskeletal and Skin Diseases)

Heat and Cold Therapy - Some patients get significant relief of pain symptoms by dipping their hands in hot wax (paraffin) dips in the morning. Hot wax can often be obtained at local pharmacies or medical supply stores. It can be prepared in a Crock-Pot and be reused after it hardens as a warm covering over the hands by peeling off and replacing it into the melted wax (Ruddy, Shaun, *et al*., 2001; Klippel, John *et a.*, 2008)

Warm-water soaks and nighttime cotton gloves (to keep the hands warm during sleep) can also help ease hand symptoms. Performing gentle range of motion exercises regularly can help to preserve function of the joints. These exercises are easiest to perform after early morning hand warming (Ruddy, Shaun *et al.*, 2001; Klippel, John *et al*, 2008).

Glucosamine and Chondroitin - Glucosamine and chondroitin sulfate have been used as nutriceuticals since 1969. They are believed to be ameliorate the symptoms of osteoarthritis by reducing inflammation and by aiding in the restoration of normal cartilage (Jackson, 2004) Glucosamine sulfate (GS) and chondroitin sulfate (CS) are derivatives of glycosaminoglycans found in articular cartilage, and are available without prescription from

pharmacies and supermarkets. Chondroitin and glucosamine sulfate are natural substances found in the joint fluid. Chondroitin is thought to promote an increase in the making of the building blocks of cartilage (collagen and proteoglycans) as well as having an anti-inflammatory effect. Glucosamine may also stimulate production of the building blocks of cartilage as well as being an anti-inflammation agent. Both of these nutrients are also found in shark cartilage, the shells of shellfish, and pig ears and noses, and are components of normal cartilage (Rebecca Grainger and Flavia Cicuttini, 2004; www.emedicinehealth.com; National Institute of Arthritis and Musculoskeletal and Skin Diseases)

In recent years, glucosamine and chondroitin has shown some potential for reducing the pain of osteoarthritis, though no conclusive proof has emerged to date (National Institute of Arthritis and Musculoskeletal and Skin Diseases)

The Glucosamine/Chondroitin Arthritis Intervention Trial (GAIT), which was cosponsored by the National Center for Complementary and Alternative Medicine (NCCAM) and National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS), assessed the effectiveness and safety of these supplements when taken together or separately. The trial found that the combination of glucosamine and chondroitin sulfate did not provide significant relief from osteoarthritis pain among all participants. However, a subgroup of study participants with moderate-to-severe pain showed significant relief with the combined supplements. The 4-year trial was conducted at 16 sites across the United States. (Clegg *et al.*, 2006).

Although it is not effective for all afflicted individuals, the Arthritis Foundation (AF) suggest a safe dose of glucosamine and chondroitin sulfate to be 1500mg/day (given as 500mg three times daily) and 1200mg/day (given as 400mg three times daily) respectively (Arthritis Foundation, 2005b)

Some older reviews conclude that glucosamine sulfate was an effective treatment (Poolsup *et al*., 2005; Black C et al, 2009) while some others have found it ineffective (McAlindon *et al*., 2004; Vlad *et al.*, 2007).

A difference has been found between trials involving glucosamine sulfate and glucosamine hydrochloride, with glucosamine sulfate showing a benefit and glucosamine hydrochloride not. The Osteoarthritis Research Society International (OARSI) recommends that glucosamine be discontinued if no effect is observed after six months (Zhang *et al.*, 2008).

There is some concern about the potential for glucosamine to negatively affect insulin regulation in individuals with insulin resistance or diabetes (Mc Alindon and Biggee, 2005), although GAIT found no change in glucose tolerance (NIH, 2006).

A meta-analysis report that looked at over 3000 human subjects found no adverse effects of oral glucosamine administration on blood, urine or fecal parameters and no serious or fatal side effects (Anderson *et al.*, 2005). However, chondroitin is chemically similar to commonly used blood thinners such as warfarin (Coumadin) and could cause excessive bleeding infused in combination.

2. OTHER ALTERNATIVES

Avocado-soybean unsaponifiables (ASUs): Preliminary results indicate that a particular type of oil from avocado and soybeans, mixed together and taken orally, may slow cartilage degradation and promote cartilage repair in hip and knee joints (Natural Medicines Comprehensive Database, 2009)

S-adenosyl-L-methionine (SAMe, pronounced "Sammy"): SAMe is a man-made form of a natural byproduct of the amino acid methionine (Gregory PJ et al, 2008) According to the Arthritis Foundation, SAMe has also shown promise for reducing pain and improving mobility in people with osteoarthritis at doses of 600 to 1200 mg/day (Take 1000 mg daily for 2 weeks, then 200 mg 2 times a day), but should not be taken without a doctor's supervision (Arthritis Foundation, 2007) SAMe improves swelling, early morning stiffness, range of motion, and pain relief (John J. Swierzewski and Stanley J. Swierzewski, 1998-2011)

Transcutaneous electrical nerve stimulation (TENS): TENS is a technique that uses a small electronic device to direct mild electric pulses to nerve endings that lie beneath the skin in the painful area. TENS may relieve some arthritis pain. It seems to work by blocking pain messages to the brain and by modifying pain perception (National Institute of Arthritis and Musculoskeletal and Skin Diseases)

Certain pulsed electro-magnetic fields can also affect the growth of bone and cartilage with potential use in osteoarthritis and use of static magnets may provide temporary pain, relief under certain circumstances (Trock, 2000)

Tai chi and yoga

Many people use these therapies to abate stress in their lives, though small studies have found that tai chi and yoga may reduce osteoarthritis pain. Yoga and tai chi are the excellent methods to improve the flexibility and relaxation of the joints. Both yoga and tai chi increase muscle strength, flexibility, and balance - all of which are essential to relief from arthritis (Arthritis Foundation life improvement series programs, 2009; Jon Barron, 2010)

In traditional yoga practice, the emphasis is on the joining of mind and spirit that accompanies the practice rather than strictly on the physical aspects. Yoga is associated with a wide range of physical and psychological benefits that may be especially helpful for persons living with a chronic illness (Jon Barron, 2010)

Yoga involves twisting your body into pretzel-like poses, it can be safe and effective for people with osteoarthritis.

Yoga controlled movements and gentle pressures, reach deep into troubled joints that help build strength, flexibility, and balance and reduce arthritis pain and stiffness. In addition, the controlled stretches in conjunction with deep breathing exercises, relax and release the muscles that have held up around the joints to protect them. The meditative nature of yoga may offer the mental benefits such as a feeling of well-being and peace of mind, which gives positive effects in pain control (Dr. Sejal Shah, www.wlsecyoga.org, 2009; www.home-remedies-for-you.com, 2008)

Tai Chi provides benefits with even less stress than yoga. Tai Chi, is a form of mind-body exercise, originated as a martial art in China. Also known as 'moving meditation', it utilizes slow, gentle movements along with deep breathing and relaxation to build strength, balance and flexibility. The practice consists of gentle, repetitive movements, stances, and breathing that get the body's energy flowing more abundantly and freely (Jon Barron, 2010; HealthDay News, 2010)

Tai chi classes improved flexibility and attitude, better ability to get around, improved ability to perform physical activity (even if it was vigorous), stronger muscles, improved range of motion, and reduced pain (Jon Barron, 2010)

Tai Chi appears to provide both physical and mental benefits, said Leigh F. Callahan, an associate professor of medicine at the University of North Carolina at Chapel Hill School of Medicine (HealthDay News, Nov. 24, 2010)

Dr. Raymond Gaeta, who directs pain management services at Stanford Hospital & Clinics, says that these practices "are intended to maintain muscle tone, strength, and flexibility, and perhaps even spiritual aspects like mindfulness - focusing in the moment, focusing away from the pain." (Jon Barron, 2010)

CONCLUSION

With the use of other methods and technique of treatment for osteoarthritis can help bring down the use of medications. Therefore, these alternative therapies may provide a relief from any other major disease.

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