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Don't Let Osteoarthritis Pain Get In Your Way

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INTRODUCTION

Osteoarthritis of the knee is the major problem that we can observe in most of the individuals. The etiology and pathology of the disease is unknown. But the treatment of the disease is focused on the signs and symptoms. 75% of the patients had most chronic pain in the knee for at least 6 months. Decrease of the swelling of the knee is reduced by the acupuncture, it stimulates the nerves and decreases the pain at the knee joint. While a recent study tells that homeopathy also plays an important role in reducing the pain stimulation [1].

Osteoarthritis is a degenerative joint disease due to the breakdown of joint cartilage and underlying bone. Symptoms include, joint pain and stiffness, joint swelling, numbness of hands and legs [2]. The functional disability with substantial pain occurs in osteoarthritis and it decreases the health quality of life. It can be mostly observed in adults [3].

It is also called as degenerative arthritis which is affecting 27 million individuals all over the world. It can affect any part of the body but mostly it affects knees, hips, lower back and neck, joints of the fingers and bases of the thumb and toe.

In normal joints, a rubbery material which is a firm mass of cartilage which covers the end of each bone. This cartilage gives a smooth gliding surface for movement of the joint and it acts as a cushion between the bones but in osteoarthritis, the breakdown of cartilage takes place which causes pain, swelling and problems for the motion of the joint. When it gets worsened, bones may break down and develop growths called spurs. Bits of cartilage may chip off and float around the joint. In the body, an inflammatory process takes place and cytokines and enzymes cause further damage to the cartilage. In the final stages, cartilage wears and tears away and bone rubs against the bone which leads to the damage of the bone and causes more pain.

Mostly it is characterized by the articular cartilage loss, formation of osteophyte, sclerosis of subchondral bone and inflammation of synovial fluid which leads to the stimulation of pain which leads

to the loss of joint function. The risk factors are associated with age, gender, previous joint trauma, obesity, menopause and other genetic variations. The progression of the disease is caused probably due to pro and anti-inflammatory, angiogenic and growth signaling pathways are main aspects. In order to continue research on these diseases, high valuable tools of high-throughput sequencing techniques is used [4 - 8]. The disease get effected in all the ages of the people. It is most common in people older than 65. One in two adults will develop the knee symptoms during their lives. One in four adults will development symptoms of hip by age 85. One in 12 people 60 years or older have hand .

About 15% of the population in all parts of the world is affected by the rheumatoid arthritis. It is a chronic inflammatory disease where etiology is not known. But the evidence indicates that T-cell mediated inflammation leads to cause the disease in which T-lymphocytes, pro inflammatory cytokines are associated with inflammation and damage of the tissue. The gene that is responsible for the cause of the disease should be identified and helps in neutralizing such auto immune disorders [9,10].

Osteoarthritis condition progressively disables health condition and due to severe pain psychological behavioral effects can also be observed. In older individuals, depression can be observed. As it is irreversible, chronic painful health aggravating factors can be seen [11]. Improvement in the therapeutic strategies for the management of osteoarthritis helps in reducing and improvement in the pain. Emergence of new cell therapy and the use of cell transplantation, undifferentiated mesenchyme stem cells have been greatly increased and their efficiency and safety is greatly studied [12].

The set of genetic variants associated with risk for disease is identified. Secondary Osteoarthritis which is caused by the other factors such as injury, trauma etc. and primary Osteoarthritis caused by genetic inheritance [13-15]. The prevalence of this disease in European and Asian countries is widely high in prevalence of knee at 12.2% and that of hip at 7.4%. Eggshell membrane consists of fibrous protein which contains high bioactive components of collagen type namely glycosaminoglycan which has shown a beneficial in the treatment of Osteoarthritis and it has ability to reduce the various pro-inflammatory cytokines [16-20].

SYMPTOMS OF OSTEOARTHRITIS

Symptoms of the disease is varied depends on the joints which gets affected and how severely they are effected. The most common symptoms include pain, stiffness in the morning or after the resting stage. When the joints get effected, it may swollen, sore or stiff joints can be seen in hips, knees and lower back.

- Stiffness goes away after making movements
- Mild swelling around a joint
- Cracking sound or clicking sound when a joint bends
- Pain gets worsened towards the end of the day

Osteoarthritis may effects different parts of the body

- Hips:** Pain can be observed in groin area and sometimes in the inside of the knee or thigh
- Knees:** When moving the knee, a grating or scrapping sensation occurs
- Fingers:** It gets swollen, when bony growths called spurs occurs and they become tender and red. There may be pain at the base of the thumb.
- Feet:** There may be swelling at the ankles or toes where pain and tenderness is felt in the large joint at the base of the big toe

Many people think that the effect of osteoarthritis are inevitable they do not do anything to manage it but the symptoms can hinder the work ,social life and family life if any preventive measures are not taken to prevent the joint damage and increase the flexibility

Due to the treatment for osteoarthritis is very expensive, Physiotherapy, acupuncture is better used as it is cost reductive and effective process for decreasing the pain. The severity of the pain can be detected by the Magnetic resonance imaging at the knee joint and by various comparisons the therapy is given to the individual [21].In females, hand osteoarthritis is most commonly seen. The most commonly seen effects are enlargement of the finger joints and disability of the hand can be observed. By doing exercises, the range of the motion of the joint can be improved as well as muscle strength and lengthening of the tendon [22].

OSTEOARTHRITIS DIAGNOSIS

Firstly the doctor will collect the individual's information on personal or family medical history and performs a physical examination for order of diagnostic tests.

The information that helps for diagnosis includes;

- 1) Description of the symptoms
- 2) Details about when and how the pain and other symptoms began
- 3) Details about the medical problems that exist in the body
- 4) The location of the pain, stiffness, symptoms are notified
- 5) How the symptoms affecting the daily activities
- 6) List of currently using medications

The doctor examines the joint where it is getting severe pain by moving the joint in various range of the motion and looking for areas which are tender or swollen or any joint damage. The position and alignment of the neck and spine are also checked. By the following tests, it may be confirmed.

- 1) Joint aspiration: The doctor will numb the affected area and then insert a needle into the joint to withdraw fluid. The fluid is examined for the evidence or any presence of crystals or joint deterioration.
- 2) X-rays: It shows the damage of the joint by the radiation
- 3) MRI: Magnetic resonance imaging doesn't use radiation but gives better images of cartilage and other structures to detect abnormalities of osteoarthritis

For the reduction of the pain, NSAIDS can be used but the effect of it is limited or dissolves. Pregabalin or acetaminophen has been used but good adherence can be observed in the patients with alcohol drinker rather than non-alcoholic individuals. Research has been carried out in these aspects and wants to achieve greater efficiency in reducing the pain [23-25]. Nonsteroidal anti-inflammatory drugs are frequently used in osteoarthritis but these carry a risk of age-related, systematic adverse effects on heart, renal, hepatic and GI system. These NSAIDS has to use with caution or contraindicated but the risk of side effects can be greatly reduced with usage of topical application [26,27].

The most commonly used treatments for this disease consists of NSAIDS, Cortisone injections, Knee arthroscopy, Viscosupplementation and Knee arthroplasty. Recent studies tells us that regular exercises and weight loss can helps in reducing pain of knee joint. The bariatric surgery patients with radiographic evidence experience enhance improvement in symptoms at 6 to 12 months post-surgery [28-33]. 1% of the population is also affected by the ankle arthritis. The common causes for this disease is due to tumor, infections, inflammatory arthritis and crystalline arthropathy. The widely accepted treatments for ankle arthritis at the end stages is arthrodesis and replacement of the ankle. It is also debilitating condition for many patients [34-36].

When the failure of the joint is beginning, the condition may be asymptomatic but later it is characterized with disabling pain and dysfunction of the joint. The clinical assessment of the patients can be done with the appearance of the symptoms allowing evaluation the range of deformities, movement and instability. When it is in advance stage, the features of the disease can be visible on plain radiographs showing narrowing of the joint space and there will be changes in the subchondrol bone. The most commonly used method for the radiographic evaluation is the Osteocyte based Kellgren Lawrence joint scoring system which grades the changes in the joint in five levels from 0 -4 where 0 corresponds to healthy joint and K/L grading knows by the presence of osteophyte [37-39].

The most common surgical intervention for end stage knee osteoarthritis is total knee arthroplasty. The initiation of rehabilitation at the earliest is beneficial for early hospital discharge [40-43]. Advance treatment in osteoarthritis had shown its effectiveness and improving individual pain by the technology known as Total Hip Arthroplasty [44].

In the adult population, the osteoarthritis of the hip is the significant cause of pain and it is commonly treated with partial or total joint replacement. Total hip arthroplasties is highly expensive surgery with high risk of 25.5 fold of myocardial infarction and 4.7 times increased risk of ischemic stroke [45]. Non-steroidal anti-inflammatory drugs are frequently used in osteoarthritis but these carry a risk of age-related, systematic adverse effects on heart, renal, hepatic and GI system. These NSAIDS has to use with caution or contraindicated but the risk of side effects can be greatly reduced with usage of topical application [46,47].

The Osteoarthritis Research Society International has developed certain guidelines for non-surgical treatment of Osteoarthritis which includes; land and water based excercises, weight loss, strength training and educating by bringing awareness among the people. The surgical treatment includes bio-mechanical interventions, intra-articular injections, usage of COX-2 inhibitors, and walking aids [48, 49]. The American Academy of Orthopedic Surgeons [AAOS] had released a set of clinical practice for the Osteoarthritis of the knee by making operative treatment options by the medication of NSAIDS which is although limited where has the non-operative treatment has failed to relieve patient symptoms [50,51].

Greater risk of osteoporosis prevention primarily with lifestyle changes;

- Calcium-rich diet
- Adequate vitamin-D intake
- Regular excercises
- Intake of Omega-3- fatty acids
- Reducing the weight of the body

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Recent studies tells us that BoNT-A injection to the ankle is associated with improvement in pain and balance in patients These can be last for 6 months. This supports a possible role for BoNT-A as an alternate option for painful osteoarthritis [55]. Replacement of the joint procedures cannot be done for young patients, especially for sports individuals. The replacement can be done for aged people who cannot bear the severe pain. Several tests are performed and then replacement of joint is done by doing the surgery [56-58]. Total Knee anthroplasty is the reproductive effective procedure for the treatment of advanced arthritic knee. After surgery prophylactic antibiotics with 1gm of the cephalosporin's of first generations were administered 1 hr before the operation intravenously. Then all the patients were allowing to full weight bearing after the surgery immediately [59-61].

A literature review where the data is gathered tells us that the biochemical forces also act on the joints. It can be provided by the therapists by providing to improve and restore hand strength [62-65].

Natural treatment of arthritis can be prevented by the following methods;

- 1) Loss of Weight
- 2) Doing more excercises
- 3) Use Hot and Cold Therapy
- 4) Try Acupuncture
- 5) Use Meditation to Cope With Pain

- 6) Include the Right Fatty Acids in Your Diet
- 7) Add Turmeric to Dishes
- 8) Get a Massage
- 9) Consider Herbal Supplements

OSTEOARTHRITIS TREATMENT

It is a long term disease. There is no cure for the disease but the treatments are available in order to manage the symptoms. The several factors have to be managed which includes:

- Managing the symptoms - pain, stiffness, swelling
- Improving the movement of the joint and flexibility
- Healthy weight should be maintained
- Getting enough exercises and maintain the diet

One of the best way to get rid of the osteoarthritis is to get moving as the joint hurts when the exercises is done. Aerobic exercises helps to improve the stamina and improve the range of the motion by maintaining the flexibility in the joint and reducing the stiffness. Slow and gentle exercises of joints helps in reducing the pain. The basic rule for obese people is to eat less calories and increase the physical activity.

Medications are also available as syrups, pills, creams, lotions, injections. They are available at the over-the-counter or by prescription. They include:

- Analgesics - Acetaminophen, opioids, atypical opioid (tramadol)
- NSAIDs - aspirin, ibuprofen, naproxen, celecoxib
- Corticosteroids - anti-inflammatory medicines
- Hyaluronic acid - It occurs naturally in the joint fluid which acts as a shock absorber and lubricant. The acid breaks down in osteoarthritis people. For this, the injections are given.

Physical and occupational therapies helps in reducing the pain which includes heat and cold therapies, assistive devices - scooters, canes, walkers, splints, shoe orthotics and tools like jar openers, steering wheel grips, proper use of joints, range of motion and flexible exercises. Natural and alternative therapies includes nutritional supplements, acupuncture, massage, relaxation techniques and hydrotherapy. A surgery is done on the suggestion given by doctor where the damaged joint is replaced especially at hips or knee joint. The individual has to develop positive attitude which helps in boosting the immune system and increase the person's ability to handle pain. The safe and reliable procedure for reducing the pain relief and helps in improving the osteoarthritis of the knee joint further long term observation for the recurrence of deformity of the knee joint is required [66].

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