

Understanding Osteoarthritis: The Signs, Symptoms and Treatment of One of Society's Most Prevalent Age-related Diseases

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Abstract

As an age-related disease, osteoarthritis takes lead in being the most prevalent condition that affects the human skeletal system. Pain, inflammation, and limitation of movement are among the main symptoms of the disease, and physicians usually diagnose the disease using physical examinations and biochemical tests. Once diagnosed, patients have many treatment options that vary depending on the severity of the disease. Increased research interests in osteoarthritis have already identified hyaluronic acid administrations and ginger compresses as having beneficial anti-inflammatory and analgesic effects that could serve as promising treatments.

Introduction

A deep understanding of the skeletal system and the diseases that affect it is vital for the study of human anatomy. Many diseases exist that directly affect our skeletal system, one of the most prevalent being arthritis. Arthritis is a form of disease characterized by inflammation in one or more joints in the body and is found in more than Hundred different types. Among the many types of arthritis, osteoarthritis—also known as hypertrophic arthritis—remains the most common type that affects Americans every year (Mayo Clinic, 2011). In the past, osteoarthritis was thought to be a symptom of cartilage degeneration due to aging. However, this understanding has broadened to include a multitude of contributing factors leading to disease.

Osteoarthritis is so widespread that it affects about one third of all white Americans and Northern Europeans within the ages of 25-74 years old (Creamer, 1997). Women who have experienced menopause are also more prone to develop osteoarthritis than men (Creamer, 1997). Apart from age and gender, other common risk factors for osteoarthritis include obesity, joint injuries, patient lifestyle, bone deformities, and other diseases such as diabetes and hypothyroidism (Mayo Clinic, 2011). Studies have shown that certain biochemical factors, such as the presence of enzymes like collagenase and gelatinase, have been found in increased concentrations in patients with osteoarthritis (Creamer, 1997).

Osteoarthritis is categorized by pain, tenderness, limitation of movement, and inflammation in one or more joints of the body. Although it can affect patients in a wide age-range, it is the major cause of limited mobility among the elderly, as it commonly affects joints in the hands, neck, lower back, knees, and hips. Though no known cure exists for osteoarthritis, there are many treatments that aim to relieve symptoms such as pain and limited joint function (Mayo Clinic, 2011).

A physical exam is commonly used as the primary stage of diagnosis of osteoarthritis. Signs of the disease include fluid around joints, limited range of motion, and signs

of joint inflammation including warmth, red coloring, and tenderness (Urbano, 2001). Doctors may analyze concentrations of biochemical factors, such as hyaluronic acid and C-reactive protein, by drawing joint fluid. These tests ensure that the physical symptoms of inflammation, joint tenderness, and limited motion are not due to other common diseases that affect joints such as gout (Creamer, 1997).

In addition to a change in lifestyle and an increase in mild exercise, the most common treatment for osteoarthritis is the administration of non-steroidal anti-inflammatory drugs (NSAIDs) such as ibuprofen. However, once diagnosed with the disease, physicians look for various signs that develop over time, showing the worsening or progression of the disease, one of which includes the presence of Heberden's nodes. Heberden's nodes are enlargements of the terminal interphalangeal joints that appear in virtually every case of osteoarthritis (Urbano, 2001). They serve as a good indicator of osteoarthritis, as they are physically recognizable without intrusive testing. Though present in most cases of osteoarthritis, the histological nature of the formation of Heberden's nodes remains unknown (Urbano, 2001).

As mentioned previously, another indication of osteoarthritis is an abnormal concentration of hyaluronic acid. Hyaluronic acid is widely distributed throughout human tissues and makes up a major portion of synovial fluid and cartilage (Curran, 2010). During slow motions, hyaluronic acid in the form of a viscous fluid serves as a joint lubricant that doubles as a shock absorber during fast movements. In patients with osteoarthritis, the concentration of endogenous hyaluronic acid is diminished due to the depolymerization of the long polysaccharide chains found in hyaluronic acid (Curran, 2010). Another reason for the decrease in hyaluronic acid is attributed to its dilution by the effusion of arthritic synovial fluids (Curran, 2010). Thus, the decreased lubrication of the joints leads to a change in joint mechanics and increased damage to diseased cartilage.

Recent studies indicate that intra-articular administration of hyaluronic acid, which has the pharmaceutical name Supratz®, can be used as a promising treatment for osteoarthritis (Curran, 2010). These studies indicate that hyaluronic acid may have "analgesic, anti-inflammatory, and antioxidant effects" (Curran, 2010). Furthermore, the study concludes that hyaluronic acid has a chondroprotective effect of inhibiting cartilage degradation in addition to fostering the healing and repair of diseased cartilage (Curran, 2010).

Treatment of osteoarthritis is case dependent, varying on the severity of the disease in the patient and how much of an effect the disease has on their ability to live comfortably. Surgery, such as knee or hip replacement, is the most invasive treatment and is reserved as the last approach for relieving osteoarthritic symptoms (Creamer, 1997). Because of its prevalence in our society, research to understand and treat osteoarthritis has been increasing. New insights include the exploration of non-pharmacological treatments for osteoarthritis through alternative medicine, such as the use of ginger compresses for pain management and for anti-inflammation and analgesic effects (Therkleston, 2010). As a protective measure, physicians now encourage their middle-aged patients who show early signs of the disease to exercise regularly, eat a balanced diet, and to

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supplement it with calcium and vitamin D in order to increase bone density and delay the effects of this life-altering condition.

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