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osteoarthritis

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Osteoarthritis

Definition

Osteoarthritis (OA), which is also known as osteoarthrosis or degenerative joint disease (DJD), is a progressive disorder of the joints caused by gradual loss of cartilage and resulting in the development of bony spurs and cysts at the margins of the joints. The name osteoarthritis comes from three Greek words meaning bone, joint, and inflammation.

Description

OA is one of the most common causes of disability due to limitations of joint movement, particularly in people over 50. It is estimated that 2% of the United States population under the age of 45 suffers from osteoarthritis; this figure rises to 30% of persons between 45 and 64, and 63-85% in those over 65. About 90% of the American population will have some features of OA in their weight-bearing joints by age 40. Men tend to develop OA at earlier ages than women.

OA occurs most commonly after 40 years of age and typically develops gradually over a period of years. Patients with OA may have joint **pain** on only one side of the body and it primarily affects the knees, hands, hips, feet, and spine.

Causes and symptoms

Osteoarthritis results from deterioration or loss of the cartilage that acts as a protective cushion between bones, particularly in weight-bearing joints such as the knees and hips. As the cartilage is worn away, the bone forms spurs, areas of abnormal hardening, and fluid-filled pockets in the marrow known as subchondral cysts. As the disorder progresses, pain results from deformation of the bones and fluid accumulation in the joints. The pain is relieved by rest and made worse by moving the joint or placing weight on it. In early OA, the pain is minor and may take the form of mild stiffness in the morning. In the later stages of OA, inflammation develops; the patient may experience pain even when the joint is not being used; and he or she may suffer permanent loss of the normal range of motion in that joint.

Until the late 1980s, OA was regarded as an inevitable part of **aging**, caused by simple "wear and tear" on the joints. This view has been replaced by recent research into cartilage formation. OA is now considered to be the end result of several different factors contributing to cartilage damage, and is classified as either primary or secondary.

Primary osteoarthritis

Primary OA results from abnormal stresses on weight-bearing joints or normal stresses operating on weakened joints. Primary OA most frequently affects the finger joints, the hips and knees, the cervical and lumbar spine, and the big toe. The enlargements of the finger joints that occur in OA are referred to as Heberden's and Bouchard's nodes. Some gene mutations appear to be associated with OA. **Obesity** also increases the pressure on the weight-bearing joints of the body. Finally, as the body ages, there is a reduction in the ability of cartilage to repair itself. In addition to these factors, some researchers have theorized that primary OA may be triggered by enzyme disturbances, bone disease, or liver dysfunction.

Secondary osteoarthritis

Secondary OA results from chronic or sudden injury to a joint. It can occur in any joint. Secondary OA is associated with the following factors:

- trauma, including sports injuries
- repetitive **stress** injuries associated with certain occupations (like the performing arts, construction or assembly line

work, computer keyboard operation, etc.)
- repeated episodes of **gout** or septic arthritis
- poor posture or bone alignment caused by developmental abnormalities
- metabolic disorders

Diagnosis

History and physical examination

The two most important diagnostic clues in the patient's history are the pattern of joint involvement and the presence or absence of **fever**, rash, or other symptoms outside the joints. As part of the physical examination, the doctor will touch and move the patient's joint to evaluate swelling, limitations on the range of motion, pain on movement, and crepitus (a cracking or grinding sound heard during joint movement).

Diagnostic imaging

There is no laboratory test that is specific for osteoarthritis. Treatment is usually based on the results of diagnostic imaging. In patients with OA, x-rays may indicate narrowed joint spaces, abnormal density of the bone, and the presence of subchondral cysts or bone spurs. The patient's symptoms, however, do not always correlate with x-ray findings. Magnetic resonance imaging (MRI) and computed tomography scans (CT scans) can be used to determine more precisely the location and extent of cartilage damage.

Treatment

Treatment of OA patients is tailored to the needs of each individual. Patients vary widely in the location of the joints involved, the rate of progression, the severity of symptoms, the degree of disability, and responses to specific forms of treatment. Most treatment programs include several forms of therapy.

Patient education and psychotherapy

Patient education is an important part of OA treatment because of the highly individual nature of the disorder and its potential impacts on the patient's life. Patients who are depressed because of changes in employment or recreation usually benefit from counseling. The patient's family should be involved in discussions of coping, household reorganization, and other aspects of the patient's disease and treatment regimen.

Medications

Patients with mild OA may be treated only with pain relievers such as **acetaminophen** (Tylenol). Most patients with OA, however, are given **nonsteroidal anti-inflammatory drugs**, or NSAIDs. These include compounds such as ibuprofen (Motrin, Advil), ketoprofen (Orudis), and flurbiprofen (Ansaid). The NSAIDs have the advantage of relieving inflammation as well as pain. They also have potentially dangerous side effects, including stomach ulcers, sensitivity to sun exposure, kidney disturbances, and nervousness or depression.

Some OA patients are treated with **corticosteroids** injected directly into the joints to reduce inflammation and slow the development of Heberden's nodes. Injections should not be regarded as a first-choice treatment and should be given only two or three times a year.

Most recently, a new class of NSAIDs, known as the cyclo-oxygenase-2 (COX-2) inhibitors have been studied and approved for the treatment of OA. These **COX-2 inhibitors** work to block the enzyme COX-2, which stimulates inflammatory responses in the body. They work to decrease both the inflammation and joint pain of OA, but without the high risk of gastrointestinal ulcers and bleeding seen with the traditional NSAIDs. This is due to the fact that they do not block COX-1, which is another enzyme that has protective effects on the stomach lining. The COX-2 inhibitors included celecoxib (Celebrex) and rofecoxib (Vioxx). Celecoxib is taken once or twice daily, and rofecoxib once daily.

Physical therapy

Patients with OA are encouraged to **exercise** as a way of keeping joint cartilage lubricated. Exercises that increase balance, flexibility, and range of motion are recommended for OA patients. These may include walking, swimming and other water exercises, **yoga** and other stretching exercises, or isometric exercises.

Physical therapy may also includ

Surgery

Surgical treatment of osteoarthrit e; surgical fusion of spinal bones; s ne in order to realign the bone.

Protective measures

Depending on the location of the ches, canes, hip braces, knee supports unnecessary knee bending, stair

New treatments

Since 1997, several new method ed and tested, they appear to hold p

- Disease-modifying drugs. The e its repair of existing cartilage.
- Hyaluronic acid. Injections of ility and reduced pain. These age
- Cartilage transplantation. This

The progression of osteoarthritis.
(Illustration by Hans & Cassady.)

Alternative treatment

Diet

Food intolerance can be a contril hile suggestions that may be helpful minimizing fats. Plants in the Sol should refined and processed foods. Foods that are high in bioflavonoids (berries as well as red, orange, and purple fruits and vegetables) should be eaten often.

Nutritional supplements

In the past several years, a combination of glucosamine and chondroitin sulfate has been proposed as a dietary supplement that helps the body maintain and repair cartilage. Studies conducted in Europe have shown the effectiveness of this treatment in many cases. These substances are nontoxic and do not require prescriptions. Other supplements that may be helpful in the treatment of OA include the antioxidant **vitamins** and **minerals** (vitamins A, C, E, selenium, and zinc) and the B vitamins, especially vitamins B_6 and B_5.

Naturopathy

Naturopathic treatment for OA includes hydrotherapy, diathermy (deep-heat therapy), **nutritional supplements**, and botanical preparations, including yucca, devil's claw (*Harpagophytum procumbens*), and hawthorn (*Crataegus laevigata*) berries.

Traditional chinese medicine (tcm)

Practitioners of Chinese medicine treat arthritis with suction cups, massage, moxibustion (warming an area of skin by burning a herbal wick a slight distance above the skin), the application of herbal poultices, and internal doses of Chinese herbal formulas.

Other alternatives

Recently, several alternative treatments for OA have received considerable attention and study. These include:

- transcutaneous **electrical nerve stimulation** (TENS)
- magnet therapy
- therapeutic touch

- acupuncture
- yoga

Prognosis

OA is a progressive disorder without a permanent cure. In some patients, the rate of progression can be slowed by weight loss, appropriate exercise, surgical treatment, and the use of alternative therapies.

Key terms

Bouchard's nodes — Swelling of the middle joint of the finger.

Cartilage — Elastic connective tissue that covers and protects the ends of bones.

Heberden's nodes — Swelling or deformation of the finger joints closest to the fingertips.

Primary osteoarthritis — OA that results from hereditary factors or stresses on weight-bearing joints.

Secondary osteoarthritis — OA that develops following joint surgery, trauma, or repetitive joint injury.

Subchondral cysts — Fluid-filled sacs that form inside the marrow at the ends of bones as part of the development of OA.

Resources

Periodicals

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Schnitzer, T. J. "Osteoarthritis Management: The Role of Cyclooxygenase-2-selective Inhibitors." *Clinical Therapeutics* March 2001: 313-26.

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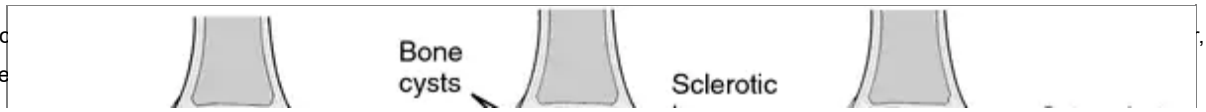
osteoarthritis [os″te-o-ahr-thri´tis]

a noninflammatory degenerative joint disease marked by degeneration of the articular cartilage, hypertrophy of bone at the margins, and changes in the synovial membrane. Primary osteoarthritis, as part of the normal aging process, is most likely to strike the joints that receive the most use or stress over the years. These include the knees, the joints of the big toes, and those of the lower part of the spine. Another common form of osteoarthritis affects the distal joints of the fingers; this form usually occurs in women. Called also **degenerative joint disease**.

Symptoms vary from mild to severe, depending on the amount of degeneration that has taken place. Osteoarthritis is caused by disintegration of the cartilage that covers the ends of the bones. As the cartilage wears away, the roughened surface of the bone is exposed, and pain and stiffness result. In severe cases the center of the bone wears away and a bony ridge is left around the edges. This ridge may restrict movement of the joint. Osteoarthritis is less crippling than **rheumatoid ARTHRITIS**, in which two bone surfaces may fuse, completely immobilizing the joint.

Treatment is aimed at preventing crippling deformities, relieving pain, and maintaining motion of the joint; see also treatment of **ARTHRITIS**.



os·te·o·ar·thri·tis (os'tē-ō-ar-thrī'tis), [MIM*165720] *This word is a misnomer in that the dominant pathologic process is degeneration rather than inflammation.*

Arthritis characterized by erosion of articular cartilage, either primary or secondary to trauma or other conditions, which becomes soft, frayed, and thinned with eburnation of subchondral bone and outgrowths of marginal osteophytes; pain and loss of function result; mainly affects weight-bearing joints, is more common in old people and animals.

Synonym(s): **arthrosis** (2) , **degenerative arthritis**, **degenerative joint disease**, **osteoarthrosis**

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osteoarthritis (ŏs′tē-ō-är-thrī′tĭs)

n.

A chronic disease characterized by progressive degeneration of the cartilage of the joints, occurring mainly in older persons. Also called *degenerative joint disease*.

os′te·o·ar·thrit′ic (-thrĭt′ĭk) *adj.*

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osteoarthritis Degenerative arthritis, degenerative joint disease, hypertrophic osteoarthritis, noninflammatory arthritis, osteoarthrosis wear-and-tear arthritis Orthopedics The most common type of arthritis characterized by inflammation, degeneration and eventual loss of the cartilage of the joints of finger, hands, feet, spine, and large weight-bearing joints–eg, hips and knees, local pain, without systemic disease Etiology Unknown; aging, metabolic, genetic, chemical, mechanical factors may play a role. See **Cervical osteoarthritis**. Cf **Rheumatoid arthritis**.

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os·te·o·ar·thri·tis (os'tē-ō-ahr-thrī'tis)

Arthritis characterized by erosion of articular cartilage, which becomes soft, frayed, and thinned with eburnation of subchondral bone and outgrowths of marginal osteophytes; pain and loss of function result; mainly affects weight-bearing joints, is more common in women, the overweight, and in older people.

Synonym(s): **degenerative joint disease**, **hypertrophic arthritis**, **osteoarthrosis**.

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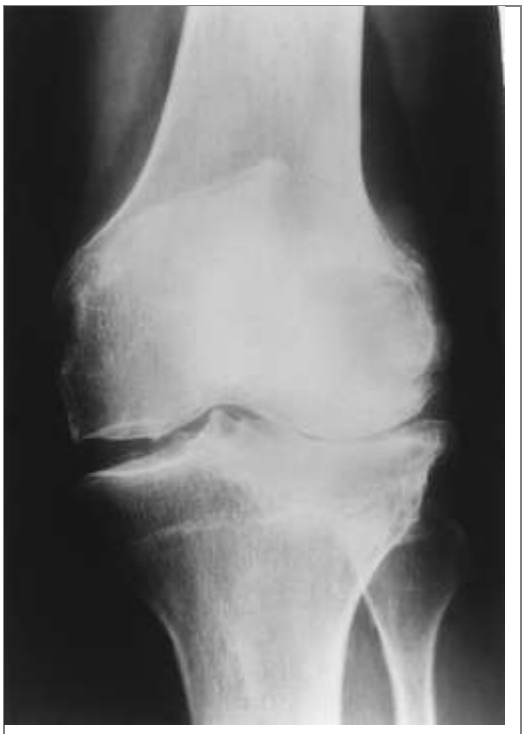
osteoarthritis (os?te-o-ar-thri'tis) [? + **arthron**, joint, + **itis**, inflammation], OA

A type of arthritis marked by progressive cartilage deterioration in synovial joints and vertebrae. Risk factors include aging, obesity, overuse or abuse of joints (repetitive motions, bending, lifting), as in sports or strenuous occupations, instability of joints, excessive mobility, immobilization, and trauma. Signs and symptoms include pain and inflammation in one or more

joints, typically in the hands, knees, hips, and spine. The dominant side of the body is involved somewhat more often than the nondominant side. Affected joints become enlarged, lose range of motion, make sounds, or feel noisy or creaky. Diagnostic testing includes joint and symptom evaluation, including assessment of the location and pattern of pain and tests to rule out other diseases, including x-rays, joint fluid analysis, and blood tests. Synonym: *degenerative joint disease* ; *illustration*



OSTEOARTHRITIS OF THE KNEE: It is especially prominent in the area above the fibula

Patient care

Treatment is supportive, using exercise balanced with rest and locally applied heat. Weight reduction, if needed, can ease joint pain and improve mobility; a body mass index below 24.9 is desirable. Aerobic exercise and flexibility routines can prevent joint stiffness related to lack of movement, and strong muscles provide better joint support. Swimming and aquatic exercises, which improve aerobic fitness without stressing joints, are encouraged. Meditation and other forms of relaxation may be beneficial as part of the patient's daily routine. Analgesics provide pain relief. Acetaminophen is the drug of choice, unless contraindicated. Nonsteroidal anti-inflammatory drugs (NSAIDs) are good alternatives for pain that is unresponsive to acetaminophen, although these agents increase the risk of gastrointestinal injury, bleeding, and renal failure. Other useful drugs include low doses of narcotic pain relievers, steroids, and intra-articular injections. Some patients, esp. those with osteoarthritis of the knee, benefit from joint bracing. If degeneration reaches the point where a joint is “bone on bone, ” joint replacement surgery usually is recommended, providing greatly improved mobility and function as well as pain relief.

osteoarthritis

A common form of persistent degenerative joint disease involving damage to the cartilaginous bearing surfaces and sometimes widening or remodelling of the ends of the bones involved in the joint. **RHEUMATOID FACTOR** is not present in the blood. Osteoarthritis is an age-related condition and affects especially those joints that have previously been damaged.

os·te·o·ar·thri·tis (os'tē-ō-ahr-thrī'tis) [MIM*165720]

Arthritis characterized by erosion of articular cartilage, either primary or secondary to trauma or other conditions, which becomes soft, frayed, and thinned with eburnation of subchondral bone and outgrowths of marginal osteophytes; pain and loss of function result.

Synonym(s): **arthrosis** (2) .

Patient discussion about osteoarthritis

Q. What are the complications of osteoarthritis? I have been suffering from osteoarthritis for over a year now. What are the complications of this disease?

A. Osteoarthritis, as other chronic arthritic diseases, has a very debilitating influence, due to the great pain people often suffer from. It sometimes becomes impossible to walk or stand up, and thus it lead to less movement, weight gain, development of blood clots and venous stasis. The emotional stress can be very debilitating as well.

Q. What Are the Possible Treatments for Osteoarthritis? My sister is suffering from osteoarthritis. What are the possible treatments for this disease?

A. Dear Garland,
My Mother has had osteoarthritis for about 20years. She has tried numerous things to allieviate the pain she has had. About three months ago, she started taking a natural product for inflammation. She still has osteoarthritis, but the pain has reduced so much that she is now able to do so many things she hasn't been able to do in a long time. She can now put pegs on the clothes line, turn light switches on/off, open bottles. I really feel for yourself and other who have osteoarthritis. I never really understood how debilitating it can be. I hope you tell people that you are in pain. I never knew my mother couldn't do all these things.
Best of luck,
Kathryn

Q. Can knee pain at childhood be connected to osteoarthritis? My mother is suffering from osteoarthritis (OA). She is 72 years old and the OA is a major problem in her life. My son is 10 years old. He has a relapsing knee pain. His pain occurs mostly at day time but can wake him from sleep. The pain is in both legs. Is my son in a risk group for OA?

A. Osteoarthritis is a disease that is most commonly caused by weight gain. The problem is that weigh gain has an important genetic factor. So, it doesn't matter if your son has knee pain right now, he is in a risk group for OA. If your mom is fat, she can start a program to lower her fat rate. I used this program for me. In the beginning it was too hard so cut her some slack!
http://www.5min.com/Video/The-Fat-Burning-Formula-For-Women---week-6-13962180

More discussions about osteoarthritis