



ARTHRITIS AND RHEUMATIC DISEASES

“Arthritis” literally means joint inflammation. Although joint inflammation is a symptom or sign rather than a specific diagnosis, the term arthritis is often used to refer to any disorder that affects the joints. These disorders fall within the broader category of rheumatic diseases. These are diseases characterized by inflammation (signs include redness or heat, swelling, and symptoms such as pain) and loss of function of one or more connecting or supporting structures of the body. They especially affect joints, tendons, ligaments, bones, and muscles. Common signs and symptoms are pain, swelling, and stiffness. Some rheumatic diseases also can involve internal organs.

There are more than 100 rheumatic diseases that collectively affect more than 46 million Americans. This overview provides brief descriptions of some of the more common forms of arthritis and rheumatic diseases as well information about their causes, diagnosis, and treatments.

EXAMPLES OF RHEUMATIC DISEASES

The most common type of arthritis, **osteoarthritis**, damages both the cartilage, which is the tissue that cushions the ends of bones within the joint and the underlying bone. Osteoarthritis can cause joint pain and stiffness. Disability results most often when the disease affects the spine and the weight-bearing joints (the knees and hips). **Rheumatoid arthritis**, which is

less common, is an inflammatory disease of the immune system that attacks the lining of the joint, called the “synovium,” resulting in pain and swelling and loss of function in the joints. The most commonly affected joints are those in the hands and feet. For examples of other rheumatic diseases, see the box on page 2.

CAUSES OF RHEUMATIC DISEASES

There are likely many genes and combinations of genes that predispose people to rheumatic diseases. Some have been identified. In rheumatoid arthritis, juvenile arthritis, and lupus, for example, patients may have a variation in a gene that codes for an enzyme called protein tyrosine phosphatase nonreceptor 22 (PTPN22). In osteoarthritis, inherited cartilage weakness may play a role.

In people who are genetically susceptible, factors in the environment may trigger the disease. For example, scientists have found a connection between Epstein-Barr virus and lupus. Excessive stress on a joint from repeated injury may lead to osteoarthritis. Hormone or other male–female differences may also play a role. For example, lupus, rheumatoid arthritis, scleroderma, and fibromyalgia are more common among women.

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The mission of the National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS), a part of the U.S. Department of Health and Human Services' National Institutes of Health (NIH), is to support research into the causes, treatment, and prevention of arthritis and musculoskeletal and skin diseases; the

training of basic and clinical scientists to carry out this research; and the dissemination of information on research progress in these diseases. For more information about the NIAMS, call the information clearinghouse toll free at 301-495-4484 or 877-22- NIAMS or visit the NIAMS website at www.niams.nih.gov.

OTHER RHEUMATIC DISEASES

- **Bursitis.** A condition involving inflammation of the bursae (small, fluid-filled sacs that help reduce friction between bones and other moving structures in the joints) that produces pain and tenderness and may limit the movement of nearby joints.
- **Fibromyalgia.** A chronic disorder characterized by the presence of tender points—points on the body that are painful upon the application of pressure—and widespread muscle pain. Many people also experience fatigue and sleep disturbances.
- **Gout.** A type of arthritis resulting from deposits of needle-like crystals of uric acid in the joints, usually beginning in the big toe. The crystals cause episodic inflammation, swelling, and pain in the affected joint(s).
- **Infectious arthritis.** A general term used to describe forms of arthritis that are caused by infectious agents such as bacteria or viruses. Parvovirus arthritis and gonococcal arthritis are examples of infectious arthritis, as is the arthritis that occurs with Lyme disease, a bacterial infection following the bite of certain infected ticks.
- **Juvenile idiopathic arthritis.** The most common form of arthritis in childhood, causes pain, stiffness, swelling, and loss of function of the joints. It may be associated with rashes or fevers and may affect various parts of the body.
- **Polymyalgia rheumatica.** A condition involving tendons, muscles, ligaments, and tissues around the joint that causes pain, aching, and morning stiffness in the shoulders, hips, neck, and lower back. It is sometimes the first sign of giant cell arteritis, a disease of the arteries characterized by headaches, inflammation, weakness, weight loss, and fever.
- **Polymyositis.** A rheumatic disease that causes inflammation and weakness in the muscles. The disease may affect the whole body and cause disability.
- **Scleroderma** (also known as systemic sclerosis). A condition in which an excessive production of collagen (a fiber-like protein) leads to thickening of and damage to the skin, blood vessels, joints, and sometimes internal organs such as the lungs and kidneys.
- **Spondyloarthropathies.** A group of rheumatic diseases that principally affects the spine. One common form—ankylosing spondylitis—also may affect the hips, shoulders, and knees. Another spondyloarthropathy, reactive arthritis, develops after an infection involving the lower urinary tract, bowel, or other organ and is commonly associated

with eye problems, skin rashes, and mouth sores. Psoriatic arthritis, which is a form of arthritis that occurs in some patients with the skin disorder psoriasis, is also considered a spondyloarthropathy. Psoriatic arthritis often affects the joints at the ends of the fingers and toes and is accompanied by changes in the fingernails and toenails. Back pain may occur if the spine is involved.

- **Systemic lupus erythematosus** (also known as “lupus” or SLE). An autoimmune disease in which the immune system attacks the body’s own healthy cells and tissues. This can result in inflammation of and damage to the joints, skin, kidneys, heart, lungs, blood vessels, and brain.
- **Tendinitis.** Inflammation of tendons (tough cords of tissue that connect muscle to bone) that is caused by overuse, injury, or a rheumatic condition and may restrict movement of nearby joints.

WHO IS AFFECTED?

Rheumatic diseases affect an estimated 46 million people in the United States of all races and ages, including an estimated 294,000 children. Some rheumatic diseases are more common among certain populations. For example, as noted above, rheumatoid arthritis, scleroderma, fibromyalgia, and lupus predominantly affect women. The spondyloarthropathies and gout are more common in men. However, after menopause, the incidence of gout in women begins to rise. Lupus is more common in and tends to be more severe in African Americans and Hispanics than Caucasians.

SIGNS AND SYMPTOMS

Different types of arthritis and rheumatic diseases have different signs and symptoms. In general, people who have arthritis feel pain and stiffness in one or more joints. Pain and stiffness may be accompanied by tenderness, warmth, redness in a joint, and/or difficulty using or moving a joint normally.

DIAGNOSIS

The diagnosis of a rheumatic disease may be made by a general practitioner or a rheumatologist, a doctor who specializes in diagnosing and treating arthritis and other rheumatic diseases.

Based on the findings of the history and physical exam, the doctor may order laboratory tests and x rays or other imaging tests to help confirm a diagnosis. Samples of blood, urine, or synovial fluid (lubricating fluid found in the joint) may be needed for the lab tests. Many of these same tests may be useful later for monitoring the disease or the effectiveness of treatments.

The doctor may need to see the patient more than once and possibly a number of times to make an accurate diagnosis.

TREATMENT

Treatments for arthritis and rheumatic diseases vary depending on the specific disease or condition; however, treatment generally includes the following:

Exercise. Physical activity can reduce joint pain and stiffness and increase flexibility, muscle strength, and endurance. Exercise also can result in weight loss, which in turn reduces stress on painful joints. The best exercises for people with arthritis are those that place the least stress on the joints, such as walking, stretching, using weight machines, stationary cycling, exercising in water, and swimming. A doctor or physical therapist can recommend a safe, well-rounded exercise program. People with arthritis should speak with their doctor before beginning any new exercise program.

Diet. Although there is not a specific diet that helps arthritis, a well-balanced diet, along with exercise, helps people manage their body weight and stay healthy. Diet is especially important for people who have gout. People with gout should avoid alcohol and foods that are high in purines, such as organ meats (liver, kidney), sardines, anchovies, and gravy.

Medications. A variety of medications are used to treat rheumatic diseases.¹ The type of medication depends on the specific disease and the individual

¹ All medicines can have side effects. Some medicines and side effects are mentioned in this publication. Some side effects may be more severe than others. You should review the package insert that comes with your medicine and ask your health care provider or pharmacist if you have any questions about the possible side effects.

patient. The medications used to treat most rheumatic diseases do not provide a cure, but rather limit the symptoms of the disease. In some cases, especially when a person has rheumatoid arthritis or another type of inflammatory arthritis, the medication may slow the course of the disease and prevent further damage to joints or other parts of the body.

Following are some of the types of medications commonly used in the treatment of rheumatic diseases.

- **Oral analgesics.** Medications that are designed purely for pain relief. These include over-the-counter analgesics such as acetaminophen and stronger narcotic medications such as oxycodone or hydrocodone, which are usually reserved for severe pain or pain following surgery or a fracture.
- **Topical analgesics.** Creams or ointments that are rubbed into the skin over sore muscles or joints and relieve pain through one or more active ingredients.
- **Nonsteroidal anti-inflammatory drugs (NSAIDs).**² A large class of medications useful against both pain and inflammation. Two NSAIDs, ibuprofen and naproxen sodium, are available over the counter. More than two dozen others, including a subclass of NSAIDs called COX-2 inhibitors, are available only with a prescription.
- **Disease-modifying antirheumatic drugs (DMARDs).** A family of medicines that is used to slow or stop the immune system from attacking the joints and causing damage in inflammatory arthritis like rheumatoid arthritis and ankylosing spondylitis.
- **Biologic response modifiers.** A relatively new family of genetically engineered drugs that block

² Warning: NSAIDs can cause stomach irritation or, less often, they can affect kidney function. The longer a person uses NSAIDs, the more likely he or she is to have side effects, ranging from mild to serious. Many other drugs cannot be taken when a patient is being treated with NSAIDs because NSAIDs alter the way the body uses or eliminates these other drugs. Check with your health care provider or pharmacist before you take NSAIDs. Also, NSAIDs sometimes are associated with serious gastrointestinal problems, including ulcers, bleeding, and perforation of the stomach or intestine. People age 65 and older, as well as those with any history of ulcers or gastrointestinal bleeding, should use NSAIDs with caution.

specific molecular pathways of the immune system that are involved in the inflammatory process.

- **Janus kinase inhibitors.** A new class of medications that work by blocking Janus-associated kinase, or JAK, pathways that are involved in the body's immune response.
- **Corticosteroids.** Strong inflammation-fighting drugs that are similar to the cortisone made by our bodies. Corticosteroids can be given by mouth, in creams applied to the skin, intravenously, or by injection directly into the affected joint(s).

Although all of these drugs have the potential to help arthritis and rheumatic diseases, all have the potential for dangerous side effects. When prescribing medications, doctors and patients must weigh the potential risks against the expected benefits.

Heat and cold therapies. Heat and cold can both be used to reduce the pain and inflammation of arthritis. Heat therapy increases blood flow, tolerance for pain, and flexibility. Cold therapy numbs the nerves around the joint to reduce pain and may relieve inflammation and muscle spasms. Heat therapy can involve placing warm towels or hot packs on the inflamed joint or taking a warm bath or shower. Cold therapy can involve cold packs, ice massage, soaking in cold water, or over-the-counter sprays and ointments that cool the skin and joints.

Relaxation therapy. Relaxation therapy helps reduce pain by teaching people various ways to release muscle tension throughout the body. In one method of relaxation therapy, known as progressive relaxation, the patient tightens a muscle group and then slowly releases the tension. Doctors and physical therapists can teach patients a variety of relaxation techniques.

Splints and braces. Splints and braces are used to support weakened joints or allow them to rest. Some prevent the joint from moving; others allow some movement. A splint or brace should be used only when recommended by a doctor or therapist, who will ensure a proper fit and provide instructions for its use.

The incorrect use of a splint or brace can cause joint damage, stiffness, and pain.

Assistive devices. A person with arthritis can use many kinds of devices to ease the pain. For example, using a cane when walking can reduce some of the weight placed on a knee or hip affected by arthritis. A shoe insert (orthotic) can ease the pain of walking caused by arthritis of the foot or knee. Other devices can help with activities such as opening jars, closing zippers, and holding pencils.

Surgery. Surgery may be required to repair damage to a joint after an injury or to restore function or relieve pain in a joint damaged by arthritis. Many types of surgery are performed for arthritis. They range from outpatient procedures performed arthroscopically (through small incisions over the joints) to the surgical removal and replacement of a damaged joint with an artificial joint, known as total joint replacement.

PROGRESS AND PROMISE

The National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS), part of the National Institutes of Health (NIH), leads the Federal medical research effort in arthritis and rheumatic diseases. The NIAMS sponsors research and research training on the NIH campus in Bethesda, Maryland, and at universities and medical centers throughout the United States. Both clinical studies (involving patients) and basic (laboratory) research result in a better understanding of what causes these conditions and how best to treat and prevent them.

The National Institutes of Health (NIH)—The Nation's Medical Research Agency—includes 27 Institutes and Centers and is a component of the U.S. Department of Health and Human Services. It is the primary Federal agency for conducting and supporting basic, clinical, and translational medical research, and it investigates the causes, treatments, and cures for both common and rare diseases. For more information about NIH and its programs, visit www.nih.gov.

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FOR YOUR INFORMATION

This publication contains information about medications used to treat the health condition discussed here. When this publication was printed, we included the most up-to-date (accurate) information available. Occasionally, new information on medication is released.

For updates and for any questions about any medications you are taking, please contact the U.S. Food and Drug Administration (FDA) toll free at 888-INFO-FDA (888-463-6332) or visit its website at www.fda.gov. For additional information on specific medications, visit Drugs@FDA at www.accessdata.fda.gov/scripts/cder/drugsatfda. Drugs@FDA is a searchable catalog of FDA-approved drug products.

For updates and questions about statistics, please contact the Centers for Disease Control and Prevention's (CDC) National Center for Health Statistics toll free at 800-232-4636 or visit its website at www.cdc.gov/nchs.