Hughston Health Alert

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OSTEOARTHRITIS AND YOU, PART 2

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- J. Edwin Lyle, MD

Arthritis and Medications

What you need to know

Arthritis is a general term that includes more than 100 different conditions. The most common form of arthritis is osteoarthritis (OA). Other more common types of arthritis include rheumatoid arthritis, juvenile rheumatoid arthritis, gout, lupus, ankylosing spondylitis, and psoriatic arthritis. Arthritis affects 46 million adults and 300,000 children in American.[1] A leading cause of disability, millions of people have significant difficulty doing daily activities, such as walking or bathing due to arthritis.

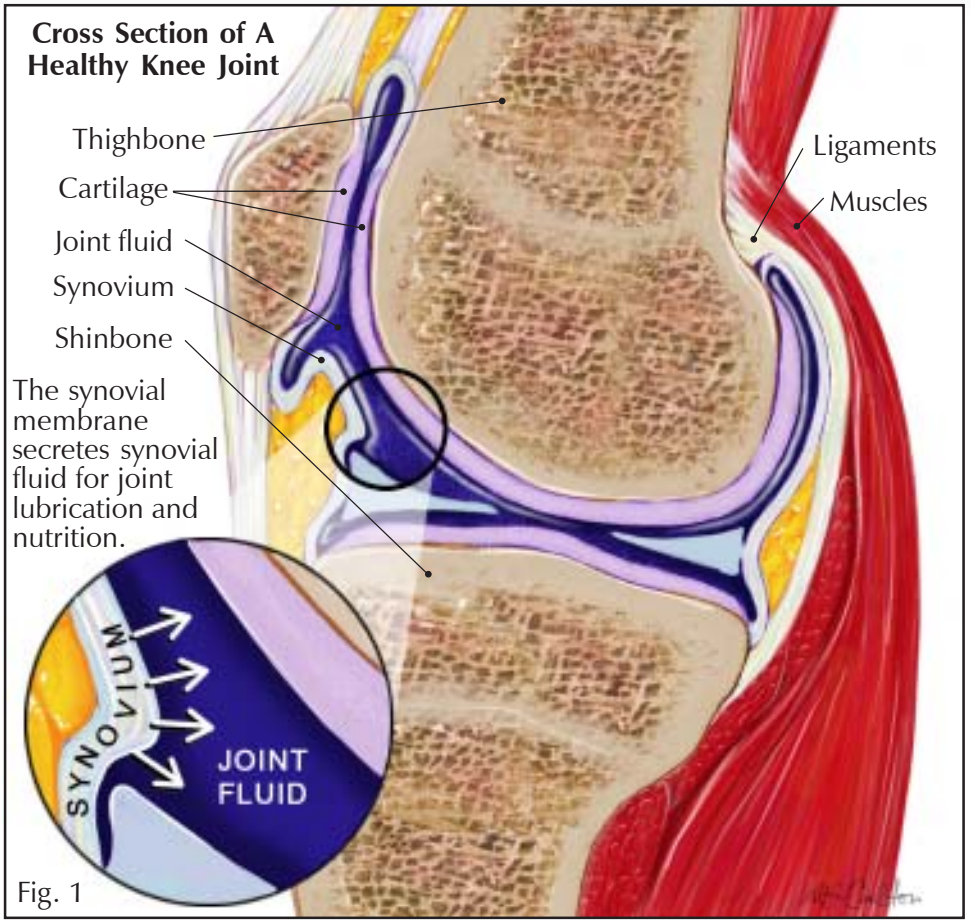


Fig. 1

Arthritis specifically affects the body's joints (the area where two bones join together). For example, the knee joint is where the tibia (shinbone) meets the femur (thighbone). Within the joint, the ends of the bone are covered with articular cartilage, which acts as a cushion or shock absorber. Synovium covers the joint and provides the fluid that nourishes and lubricates the joint. Ligaments are tissues that connect the two ends of bone and provide joint stability. On the outside of the joint are muscles and tendons that actually move the joint (Fig. 1).

OA is a degenerative or "wear and tear" type of arthritis. Thus, it becomes more common with increasing age. It may affect any joint, but it is most common in the knee, hip, and spine. The main problem in OA is thinning and eventual loss of the cartilage on the end of the bone. Loss of the cartilage results in pain, stiffness, and possible deformity of the joint. The end result is a "bone on bone" joint without any cushioning. Inflammation also plays a significant role in arthritis. Inflammation, which is the body's natural response to an injury or disease, causes pain, stiffness, and swelling. In many conditions such as tendinitis (inflammation of the tendons), or bursitis (inflammation of the bursa), inflammation is only short-term. However, in osteoarthritis inflammation continues indefinitely (Fig. 2 pg. 2).

Your health history, a physical examination, x-rays, and occasionally, lab tests are used to diagnose arthritis. Although, surgery is the only way to completely eliminate arthritis in a joint, other forms of treatment can be extremely effective in alleviating the symptoms. Many arthritis patients can continue to enjoy full and active lifestyles with the help of these treatments.

Medications are a very common and useful type of nonsurgical treatment of OA. With so many different types of medication available for arthritis, even the most astute

patient can become confused. Additionally, the recent withdrawal of two medications from the market only adds to the confusion. The two main categories of arthritis medication include the nonsteroidal anti-inflammatory drugs (NSAIDS) and the pain relieving drugs or analgesics. These medications can be further classified as generic or non-generic and prescription or over-the-counter (OTC).

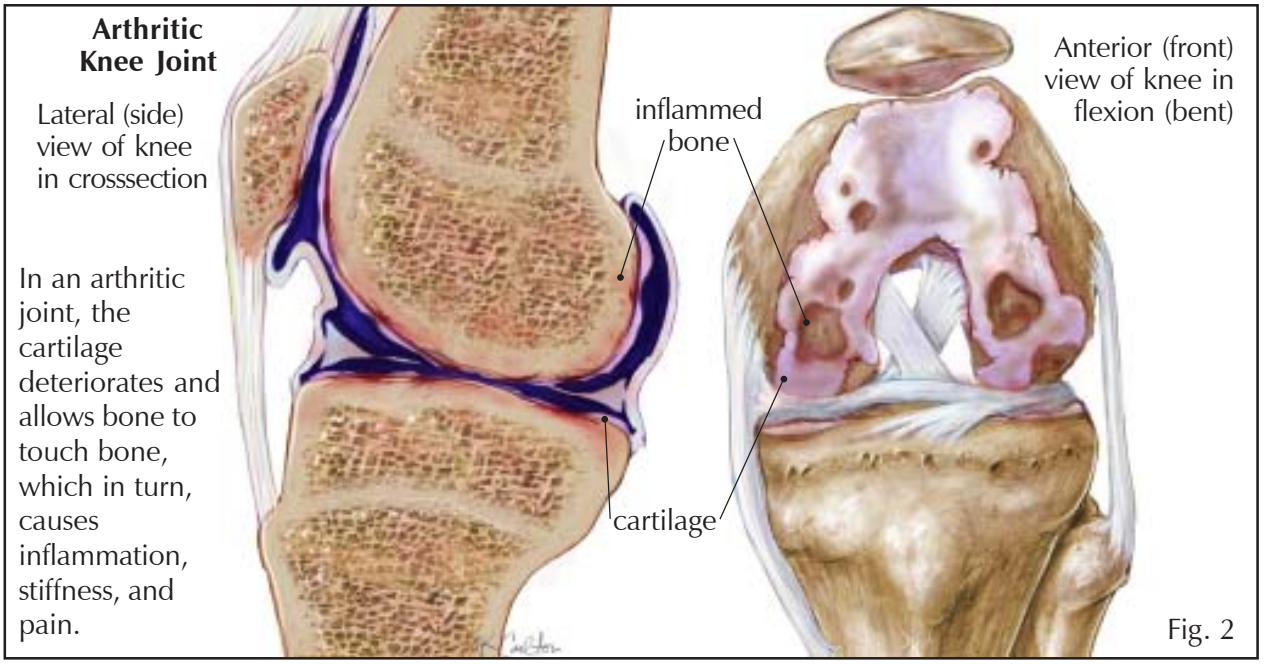


Fig. 2

NSAIDs have the ability to relieve pain and decrease inflammation. They work by inhibiting an enzyme called cyclooxygenase (COX), which stimulates the formation of substances called prostaglandins. Prostaglandins stimulate inflammation, which in turn cause pain, swelling and stiffness. Prostaglandins are also beneficial because they help protect the gastrointestinal (GI) lining. Two forms of COX have been identified. COX 1 offers minor GI protection and COX 2 mainly affects pain and inflammation. All of the traditional NSAIDs predominately affects the COX 1 system. Examples of these medications include aspirin, Diclofenac (Voltaren), Etodolac (Lodine), Ibuprofen (Motrin, Advil), Ketorolac (Toradol), Nabumetone (Relafen), Naproxen (Naprosyn, Aleve), Oxaprozin (Daypro), Piroxicam (Feldene), and Sulindac (Clinoril).

Many of the unwanted side effects of NSAIDS are due to the inhabitation of COX 1. Unfortunately, the beneficial GI protection from COX 1 is lost at the expense of decreasing pain and inflammation. This explains why the most common side effects of the traditional NSAIDs are gastrointestinal problems such as ulcers, reflux, and bleeding. Fortunately, the side effects are not very common if the drugs are used properly and for short intervals. Patients with certain risk factors (history of ulcers, reflux, bleeding disorders, etc.) must use extreme caution or may not be able to use these medications at all. The COX 2 specific drugs were recently introduced with hopes of decreasing the undesirable GI problems associated with the traditional COX 1 NSAIDS. These drugs included Vioxx, Bextra, and Celebrex. However, ongoing studies showed an increase in cardiovascular problems such as stroke, hypertension, or heart attacks with the use of these drugs. Thereafter, their manufacturers pulled Vioxx and Bextra from the market. The Food and Drug Administration (FDA) met and recommended that all NSAIDS (COX 1 and COX 2) carry strong warnings about potential risk. The majority of the FDA committee members actually voted for keeping all three COX 2 drugs on the market, because the benefits of the drugs outweigh the risks. However, Bextra and Vioxx remain off the market, leaving Celebrex as the only true COX 2 drug available. Another newer drug (Mobic) has both COX 1 and COX 2 abilities. For many individuals, especially those with a history of GI problems, the benefits of COX 2 drugs are clearly worth the potential risks.

Today, many patients would love to still have Vioxx or Bextra and wonder if these will be available in the future. At this time, there are discussions about returning Vioxx to the market, particularly in Canada.

Aspirin is one of the most commonly used traditional COX 1 drugs. Aspirin (Anacin, Bayer, Bufferin, Excedrin) is unique among NSAIDS in that it offers protection against heart attacks and strokes as well. Thus, many doctors prescribe patients a low dose or baby aspirin for this reason. The other NSAIDS do not have this effect. For osteoarthritis, higher doses of aspirin are needed for an anti-inflammatory effect, but carry a greater risk of ulcers and bleeding than the other nontraditional NSAIDS. This is why some physicians do not typically prescribe aspirin for arthritis. It is very common for a doctor to issue a patient both a low dose aspirin for cardiac protection and another traditional NSAID for arthritis. The composition does slightly increase the risk of bleeding and ulcers, but the benefits usually are much greater than the risks.

As physicians, we routinely see patients in the office who are taking several OTC medications together (such as Ibuprofen, Advil, Aleve, and Motrin). Many patients do not realize that these are all NSAIDS and that taking several of the medications together greatly increases the risk of side effects. The Los Angeles Times recently reported that the FDA might require stronger warnings for OTC drugs because overdosing, causing death or other serious health problems such as liver damage, is on the rise.[2]

It is also common for patients to take NSAIDS very sparingly, limiting the effectiveness of the drug. The drug should be taken exactly as directed on the label or as prescribed by your doctor for a sustained time period if needed. If the medication is ineffective, your doctor may prescribe another NSAIDS. Several trials may be needed to find the right NSAID for you. However, no studies have found that any particular NSAID is significantly more effective than another.

All NSAIDS (COX 1 and COX 2) have potential side effects and risks must be weighed against the benefits. Because many factors must be considered, careful doctor-prescribed interaction is needed to make the right NSAID choice.

The other main category of arthritis medications is the analgesics, or pain relieving drugs. These drugs have no anti-inflammatory properties and they will not help with swelling or stiffness. They simply kill the pain. The most common OTC analgesic is acetaminophen (Tylenol).

Because it has few side effects and is generally safer than NSAIDS, acetaminophen is often the initial drug prescribed by physicians for arthritis pain. The drug's main side effect is liver damage caused by overdosage or by people with preexisting liver damage (for example, cirrhosis, heavy drinkers, etc.) If more pain relief is required, your doctor may prescribe a narcotic analgesic that includes acetaminophen. To help relieve your pain, your doctor can prescribe acetaminophen with codeine (Tylenol #3), Hydrocodone with acetaminophen (Vicodin, Lorcet, Lortab), Oxycodone with acetaminophen (Percocet), Propoxyphene with acetaminophen (Darvocet), and Tramadol with acetaminophen (Ultracet). The potential side effects of these drugs include constipation, nausea, sedation, vomiting, dizziness, and dependence. Although the prescription can be written without acetaminophen, most of the drugs do contain the extra ingredient. Therefore, it is important to NOT take regular or OTC acetaminophen with narcotic medications if they already contain acetaminophen because over use can lead to liver damage. The pain reliever is generally safe to take with another NSAID or baby aspirin for adults.

Additional, less frequently used types of arthritis medications worth mentioning are corticosteroids. These medications include, Betamethasone (Celestone), Methylprednisolone (Medrol), and Prednisone (Deltasone). Like NSAIDs, these have a very strong anti-inflammatory effect, but are faster acting than NSAIDs. Your doctor may prescribe corticosteroids if more rapid inflammatory relief is required. They may be given orally (short term) or by injection. Steroid injections into the arthritic joint (for example, the knee or shoulder) can be extremely effective in relieving arthritis symptoms.

Other alternative medications, glucosamine and chondroitin sulfate, have recently become widely published by the media. These are substances normally found in the cartilage and joint fluids. There have been many claims that these drugs may repair damaged cartilage or prevent future damage. Based on clinical trials, these drugs actually appear to have an affect. Similar to NSAIDS, but with few side effects, these drugs are an option for patients who can't take NSAIDS. Further studies are needed to define the role of glucosamine and chondroitin sulfate in the treatment of arthritis and determine the possible long-term effects.

Arthritis is an extremely prevalent problem, but fortunately, there are many treatment options available to patients. Conservative treatments such as medications, physical therapy, activity modification, and weight loss can enable arthritis patients to live full, active lives and delay or avoid surgery. Arthritis medications, which include NSAIDS, analgesics, and corticosteroids, all have potential side effects. Patient knowledge of all the types of medications is very useful, but doctor and patient interaction continues to be the best way to avoid drug complications.

J. Edwin Lyle, MD
Auburn, Alabama

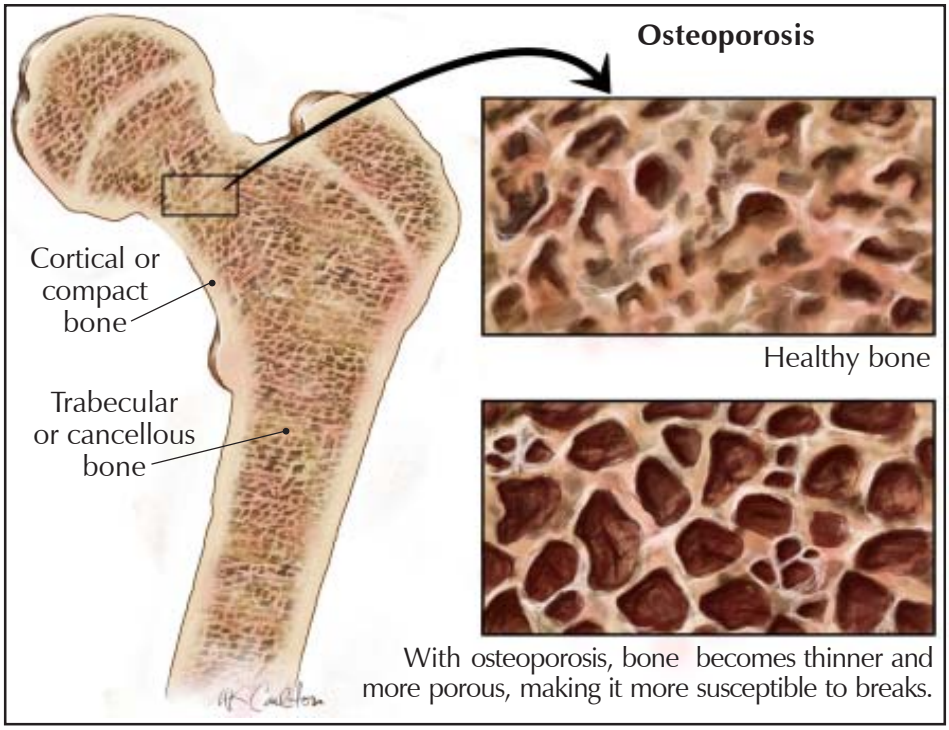
1) The Facts About Arthritis. Arthritis Foundation. http://www.arthritis.org/resources/gettingstarted/default.asp. Accessed December 31, 2006.
2) Alonso-Zaldivar R. The Nation; Painkiller warning may get stronger; The FDA wants people to understand that over-the-counter drugs like aspirin and Tylenol aren't always safe. *Los Angeles Times*. December 20, 2006.

A Correction

In the NSAIDS Chart, (Volume 18, Number 4, Fall 2006, page 4) acetaminophen was mistakenly listed in the chart. Acetaminophen is not a NSAIDS, it is an analgesic (pain relieving) medication that can be used with NSAIDS to relive pain from arthritis. The electronic version of the table has been corrected and can be found at www.hughston.com/hha.

Treatment for Osteoporosis

Fragile Bone Disease



With osteoporosis, bone becomes thinner and more porous, making it more susceptible to breaks.

Often silent, osteoporosis is a disease that can lead to broken bones in the hip, wrist, spine, and pelvis. This disease is common in women past the age of menopause and men over 70 years of age, but it can also affect children who spend much of their time indoors and breast fed babies. The disease often remains hidden until a fracture occurs.

Prevention

Prevention is the most important treatment for osteoporosis because once bone mass is lost it's very difficult to get it back. Osteoporosis can be partially prevented by building and maintaining strong bones. The necessary building blocks for strong bones are calcium and vitamin D. Growing children need 1200 mg of calcium per day. Adults need 1000 mg of calcium per day; postmenopausal women and elderly men need 1000 to 1200 mg per day. Everyone needs 800 to 1000 IU of vitamin D. It is also important to maintain a healthy weight and to get at least 30 minutes of weight bearing exercise such as walking, running, dancing, or aerobics each day.

Treatment

Treatment for osteoporosis is started when the bone mineral density drops below normal values identified on the DXA scan. All patients with osteoporosis should stop smoking, perform weight bearing exercises for 30 minutes, 3 times each week, and continue taking calcium and vitamin D supplements. Your physician may also prescribe one of the medications below to help treat your osteoporosis.

Bisphosphonates: These medications, alendronate (Fosamax), risedronate (Actonel), and ibandronate (Boniva), prevent the reabsorption of bone, thereby increasing the bone mineral density and decreasing the risk of fracture. The medications can be taken on a daily or weekly basis. Both Fosamax and Actonel are taken first thing in the morning, on an empty stomach, and with a full glass of water. Then, you must stay upright for 30 minutes. Boniva can be taken monthly by mouth and it has recently been approved for quarterly intravenous injections. The side effects of these medications include burning in the stomach, esophagitis (burning and inflammation of the esophagus), jaw osteonecrosis (death of bone), and bone pain. Patients with kidney failure or elevated blood calcium, or patients who are pregnant should not take bisphosphonates.

Selective Estrogen Receptor Modulators: Raloxifene (Evista) is able to increase bone density, but only decreases risks of fractures in the spine. It has been shown to decrease low-density lipoproteins (LDL), and may reduce the risk of breast cancer. It is less effective than estrogen on increasing the bone mineral density. The risks of heart disease, stroke, and blood clots are not yet known. This medication is taken daily.

Parathyroid Hormone: Teriparatide (Forteo) is a daily injection that stimulates the formation of new bone and has been shown to dramatically decrease fracture risks. This medication cannot be given if the blood calcium is elevated or when there is a significant history of kidney stones. Also, patients with Paget's disease should not receive this drug. Side effects include low blood pressure and elevated calcium in the blood. Osteosarcoma, a cancer in the bone, has been seen in rats, but not observed in humans in studies of parathyroid hormone.

Other available drug therapies:

Calcitonin is a nasal spray that is available, but less effective than the above therapies at increasing bone mineral density. Isoflavones is a type of phytoestrogen that is available over the counter. There is no documented increase in bone mineral density with this drug. Tibolone is a synthetic steroid that increases bone density. There appears to be an increased risk of breast cancer with this drug and it is not recommended.

Other drug therapies not yet approved or on the market:

Denosumab is a medication that affects the bone reabsorbing cells and may affect the immune system. The

medicine is currently in trial to determine its safety. Growth Factor is a hormone that stimulates growth. The results have been conflicting and it is not currently thought to be effective except in growth hormone deficiencies. Strontium ranelate is a drug that increases bone formation. It appears to be well tolerated; however, it is not yet available.

Research continues to improve the treatment and to help in the prevention of osteoporosis. This disease continues to lead to fractures in women, men, and children. Early diagnosis with a DXA scan will lead to early treatment. Building strong bones in children will help prevent the disease in the elderly.

For more information go to:
American Academy of Orthopaedic Surgeons
www.aaos.org
UpToDate Web site www.uptodateonline.com
Merck Medicus www.merckmedicus.com

Bobbi A. Farber, MD
Columbus, Georgia

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Round Table Insights on Treating the Fragility Fracture Patient, Part II: Preventing refractures: the role of Vitamin D., calcium, other agents. Orthopedics Today. 2004;24(7):18-30.

Web sites you can trust

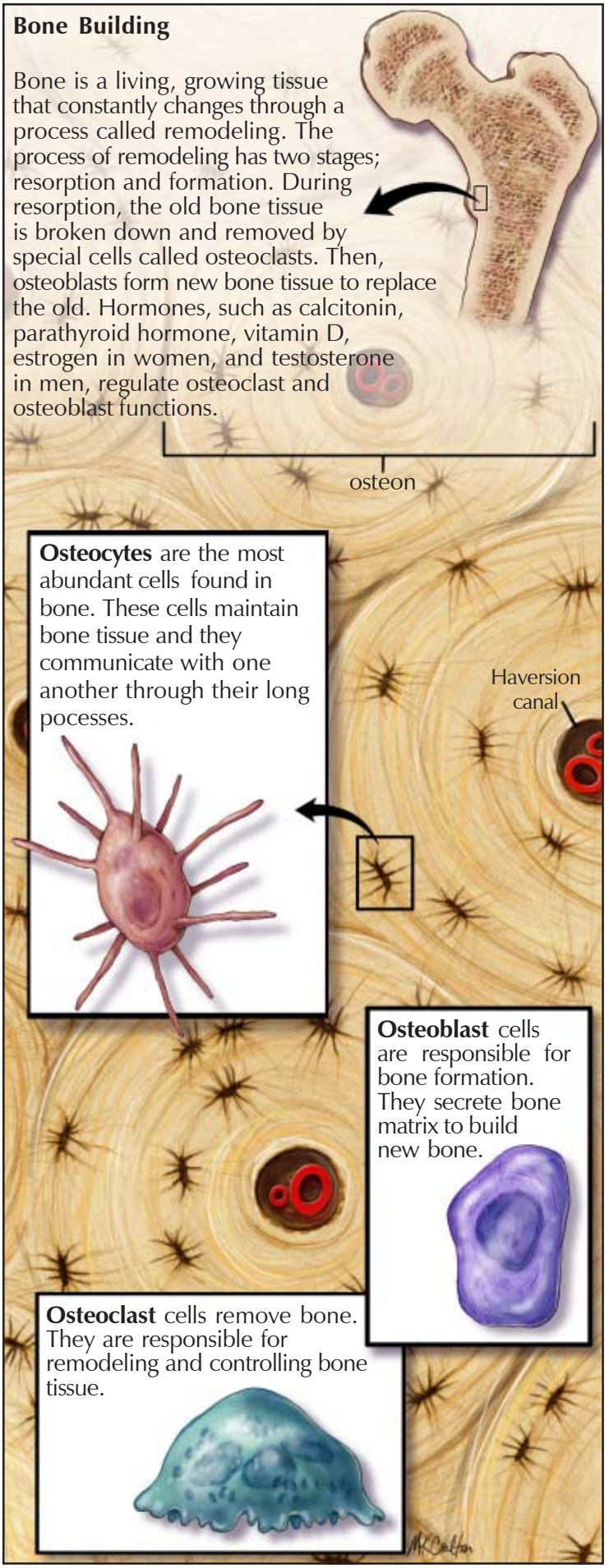
Food and Drug Administration Consumer Drug Information
http://www.fda.gov/cder/drug/default.htm#Consumer%20Drug%20Information

Hughston Health Alert
http://www.hughston.com/hha

National Council on Patient Information and Education (NCPIE)
http://www.talkaboutrx.org

American Society for Surgery of the Hand (ASSH)
http://www.assh.org/Content/NavigationMenu/PatientsPublic/HandConditions/ArthritisOsteoarthritis/Arthritis_Osteoarth.htm

The American Orthopaedic Society for Sports Medicine (AOSSM) AOSSM Patient Education Library
http://www.sportsmed.org/sml/edlit.asp



Lotions, Sprays, and Creams

Do they really work for muscle and joint pain?

Muscle soreness and joint pain are frequent problems for the active individual. Pain can reduce workout intensity or frequency and discourage individuals from training. Sports-medicine experts agree that ice is the best treatment for soothing sore muscles, but it's not always convenient to use. Some feel that when ice isn't available or practical, anti-inflammatory lotions, sprays, or creams can serve as a good alternative. Topical medications include lotions, sprays, creams, ointments, gels, balms, patches, and oils that you apply to your skin. Most topical products are available OTC and provide pain relief for muscle and joint pain from overuse injuries or disease such as arthritis. A common ingredient found in topical medications is menthol, which increases blood flow to the sore area to speed healing.

Although rub-on skin creams often smell and feel good, some critics claim not enough of a skin cream's active ingredient (usually trolamine salicylate) can actually work its way through the skin to reach deeper areas. It is believed that these joint and muscle pain relief creams, gels, lotions and other ointments are very popular amongst the athletic population due to the numbing and relaxing feeling they bring. But, can something that you rub on your skin really help your muscles and joints?

A little over a decade ago, researchers at the Veterans Administration Medical Center in Philadelphia smeared trolamine salicylate skin cream on to the knees of both dogs and humans. In the canine case, dogs with trolamine rubbed into their knees had 20 times as much salicylate in the underlying muscles, compared to those who were taking aspirin orally (salicylate is the active ingredient in aspirin). The research documented one very important fact: even though pill-popping pooches had higher blood levels of salicylate, animals using skin cream had much more of the drug in their tendons, ligaments, cartilage, and joint cavities, where it really mattered, and where the chemical could actually relieve pain and inflammation.

In the Philadelphia research, results with humans were similar, with ample amount of salicylate building up in joint cavities. Actual pain relief was just as good with the salicylate skin cream, compared to ingesting aspirin orally. Plus, the researchers noted one special cream advantage: the ointment rapidly penetrated the skin and then lingered in the underlying muscles and connective tissues for long periods of time, only slowly drifting into the blood stream to be carried away. Overall, the skin cream was quite good at relieving local muscle and connective-tissue discomfort and of course produced none of the gastrointestinal upsets which are common with aspirin and ibuprofen, two popular anti-inflammatory drugs which are taken orally.

In a more recent test involving Aspercreme, an OTC product whose main ingredient is trolamine salicylate, it was found that this product provided three main benefits: 1) Muscle soreness appeared within 12 hours after initial exercise for the placebo users but took 24 hours to appear for Aspercreme appliers; 2) The amount of pain experienced was significantly lower for Aspercreme users; and 3) Pain persisted for one day less with Aspercreme.

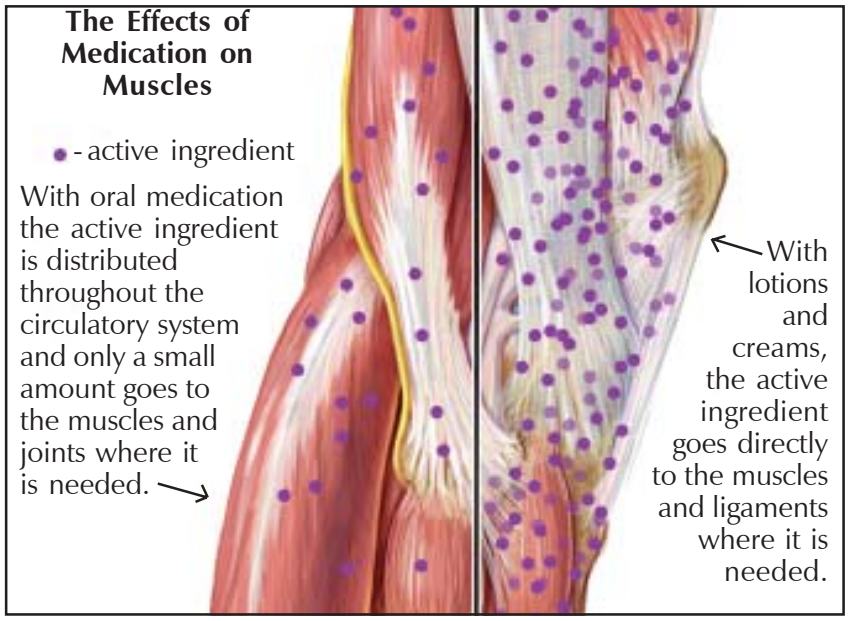
In other words, the salicylate-containing cream delayed pain, reduced the magnitude of soreness, and hastened pain's exit. And, unlike drugs taken orally, analgesic creams don't cause stomach upsets and very few people experience skin irritation when they use analgesic skin creams.

So, analgesic creams containing 10% trolamine salicylate really do work and are sometimes more effective than oral medication at relieving post-exercise soreness. There's also the intriguing possibility that a bit of skin cream rubbed on one of your body's 'hot spots' before a workout may actually reduce the amount of inflammation and pain which may be experienced after the session is over. As always, don't train through pain. When a body part hurts, you should discontinue training until it has recovered.

Courtney McQuaker, ATC
Columbus, Georgia

References:

Rub on skin creams for injuries: real relief or just quackery? Sports Injury Bulletin. http://www.sportsinjurybulletin.com/archive/0283.htm. Accessed December 19, 2006.



Over-the-Counter Medications

Sample Drug Label

Read the Label

Reading the label on over-the-counter (OTC) medication is as important as reading the label on prescription medications. In fact, it can be more important, especially if your doctor did not recommend the product and you did not consult a pharmacist. With no professional medical advice, you need as much information as possible to make the right decision before taking a medication or giving it to a family member.

In 1999, the Food and Drug Administration required suppliers of OTC medicines to use the new Drug Facts label with a deadline of 100% usage by May 2005.[1] The new label is meant to provide consumers with easy to find and easy to understand information about the medicines they buy and use.

What's on the label?

To make the label as easy to understand as possible, the same information is displayed in the same order on every OTC medication. Simplicity, order, and the use of layman's terms helps consumers choose the right medication and helps ensure the medication is taken properly. Each label must contain the information in this order:

1. The active ingredients
2. The purpose of the ingredient
3. The use of the product
4. Warnings
5. Directions on how to use
6. Inactive ingredients

Some medications have a dual purpose; and therefore, can have additional information provided on the label (Fig.). For example, calcium carbonate can be used to treat heartburn or acid indigestion and can also be used as a daily source of calcium. When the product is recommended with a dual purpose such as a medication and supplement, the label can have two labels, one inside the other.

Dennise Brogdon
Columbus, Georgia

References

1. OTC Drug Facts Label. U. S. Food and Drug Administration Web Site. http://www.pueblo.gsa.gov/cic_text/health/testube/otc.htm. Accessed December 15, 2006.

Further Reading

The Essential Guide to Arthritis Medications: Prescription and Over the Counter Treatments for Your Joint Pain From A to Z by From the Editors of Arthritis Today

Rheumatoid Arthritis: Your Medication Explained (Overcoming Common Problems Series) by Marie-Claire Mason

The Arthritis Help book: A Tested Self-Management Program for Coping with Arthritis and Fibromyalgia by Kate Lorig and James F. Fries

Arthritis, What Exercises Work: Breakthrough Relief For the Rest of Your Life, Even after Drugs & Surgery have failed by Laurie M. Aesoph

Arthritis Without Pain: The Miracle of TNF Blockers by Scott J. Zashin and M. Aurette Hesser

Exercise Beats Arthritis: An Easy-to-Follow Program of Exercises by Valerie Sayce and Ian Fraser

Preventing Medication Errors and Improving Drug Therapy Outcomes: A Management Systems Approach by Charles D. Hepler and Richard Segal

Win Lyle, MD is a native of Auburn, Alabama, and a graduate from Auburn High School and Auburn University. During college, he was the kicker on the Tiger's 1987-1989 S.E.C. Champion football teams. His honors include the Cliff Hare Award and All-S.E.C. Selections. He continued playing football after college professionally with the Phoenix Cardinals and the Birmingham Fire.

Dr. Lyle earned his medical degree from The Chicago Medical School and completed an orthopaedic surgical residency at Wright State University School of Medicine. Before becoming a member of our staff, he completed a sports medicine fellowship at The Hughston Clinic.

Dr. Lyle is board certified by the American Board of Orthopaedic Surgery, a member of the American Academy of Orthopaedic Surgeons, and a member of the Christian Medical & Dental Society. He has been active in orthopaedic research and has presented his work at various meetings. He practices general orthopaedics with a special interest in arthroscopy and sports medicine.

Dr. Lyle and his wife, Catherine, have two sets of twin boys, John and Andrew, and Christopher and James, and a daughter, Margaret. In his leisure time, he enjoys golfing, running, softball, and attending Auburn University sporting events.

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