Hughston Health Alert

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VOLUME 24, NUMBER 1 - WINTER 2012

Inside...

Down Syndrome and Orthopaedic Problems

Over the past few decades, the life expectancy for people with Down syndrome has dramatically increased from 25 years of age in 1983 to about 60 years of age today. As a result, orthopaedic surgeons often see a broad spectrum of bone and joint complications in individuals ranging from infants to adults with Down syndrome. Arthritis, bunions, flatfeet, stress fractures, hip and knee instability, loose ligaments, decreased muscle tone, and scoliosis of the spine are common musculoskeletal conditions diagnosed in people with Down syndrome.

What is Down syndrome?

With 1 in every 691 babies being born with the condition, Down syndrome is the most common chromosomal condition and birth defect. People with Down syndrome have 3, rather than 2, copies of their 21st chromosome, which leads to additional genetic material that alters development and creates special characteristics. Currently in the United States, there are more than 400,000 people of all races and economic levels living with Down syndrome. These individuals have an elevated risk for developing congenital heart defects, lung problems, metabolic conditions, and various bone and joint problems.

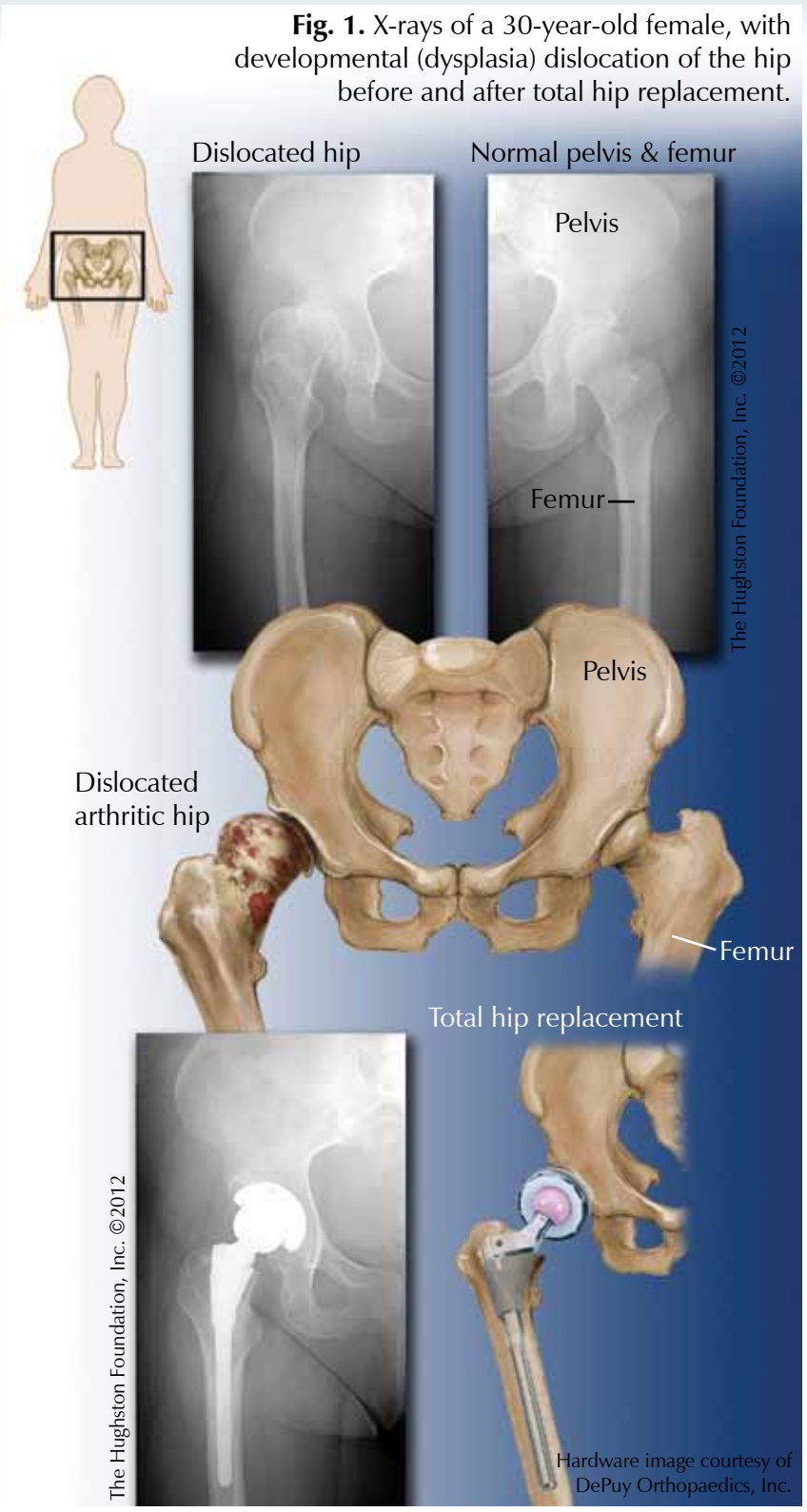

Fig. 1. X-rays of a 30-year-old female, with developmental (dysplasia) dislocation of the hip before and after total hip replacement.

Orthopaedic problems

Hip disease affects 8% to 28% of people with Down syndrome. Treating the resulting hip instability is a frequent challenge for orthopaedic surgeons. Babies with Down syndrome are often born with hips that are misshapen or with ligaments of the hip joint that are loose and stretched. The misshapen hip joint can cause developmental dysplasia, or dislocation, of the hip. Often the dislocation is apparent at birth; however, if the condition is not detected, the misshapen hip joint often becomes arthritic and eventually causes disabling pain and trouble with walking. Therefore, hip replacement may be necessary to relieve hip pain and to restore function **(Fig. 1)**.

Scientific research has shown that neck instability affects 10% to 30% of people with Down syndrome. The condition is caused by loose ligaments of the spine, which can lead to instability and arthritis in the neck joints **(Fig. 2)**. Because of this instability of the upper neck and head-neck joints, they are at a higher risk for experiencing catastrophic spinal cord injuries. Such spinal cord injuries can occur from a fall, a car accident, during surgery, or participating in collision sports.

Physical activity and sports

For people with Down syndrome, physical activity and sports are important for ensuring physical and emotional health. Playing a sport can improve balance, strength, and endurance, while also providing companionship, a sense of achievement, and increased self-esteem. Yet, families and medical providers should understand the risks associated with athletic participation and the methods available to help prevent such risk and injury.

A major concern for the athlete with Down syndrome is cervical spine instability, which can lead to progressive neurologic decline, catastrophic paralysis, and even death. Before an athlete with Down syndrome begins any form of athletic participation, he or she should be thoroughly screened and evaluated. The benefits of exercise are clear, but they must be weighed against the potential risk of injury; especially with activities that involve head collisions, such as tackle football and hockey, which should be strictly avoided.

Surgical procedures

In the event a patient with Down syndrome is faced with having to undergo a surgical procedure, the patient and his or her family need to understand that some anesthesia complications occur more frequently in individuals with Down syndrome. In general, the most significant problems involve difficulty with clear communication between the patient and physician, airway size and obstruction, abnormal heart rhythms, stomach reflux, and unstable joints in the neck. Therefore, a surgical patient with Down syndrome should also undergo extensive evaluations both before and after surgery.

Despite their many health challenges, a person with Down syndrome is often able to attend school, work, and contribute to society. Numerous orthopaedic procedures for patients with Down syndrome are successful in minimizing pain and optimizing function. While sound orthopaedic care is essential, one cannot overemphasize the importance of quality educational programs, a stimulating home environment, good overall healthcare, and a positive support system to help those with Down syndrome lead healthy, fulfilling lives.

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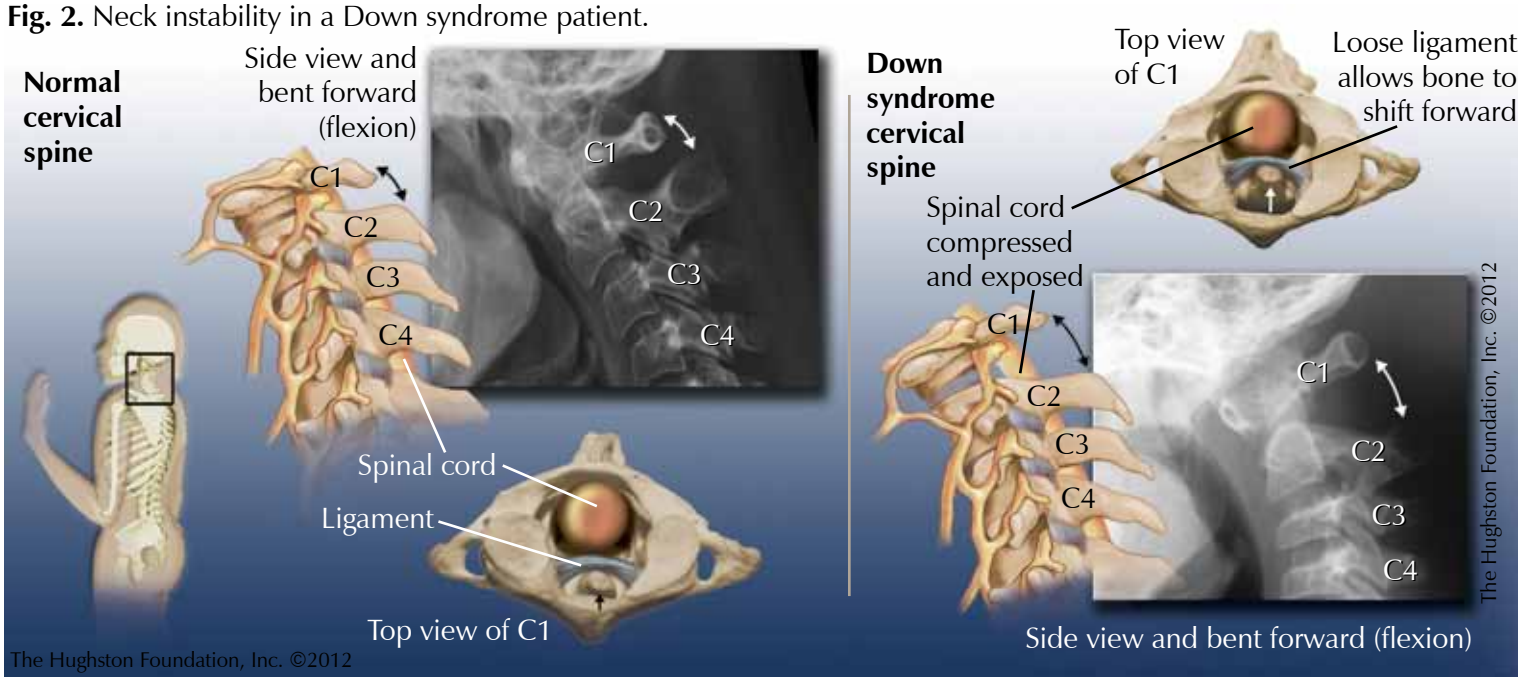
Fig. 2. Neck instability in a Down syndrome patient.



Yoga for Athletes

More than a trendy workout or stretching routine, yoga can be an excellent training tool for athletes. Yoga can help to condition the body by increasing core muscle strength (abdominal, back, and pelvic muscles) and improving flexibility and range of motion. Athletes who practice yoga can benefit from its cross-training and controlled breathing techniques, as well.

What is yoga?

The philosophy of yoga involves uniting the mind and the body. There are different types of yoga and even more philosophies, but the physical form of yoga often practiced in the Western Hemisphere is Hatha yoga. Basically, Hatha yoga involves a series of poses with patterned breathing and mental focus.

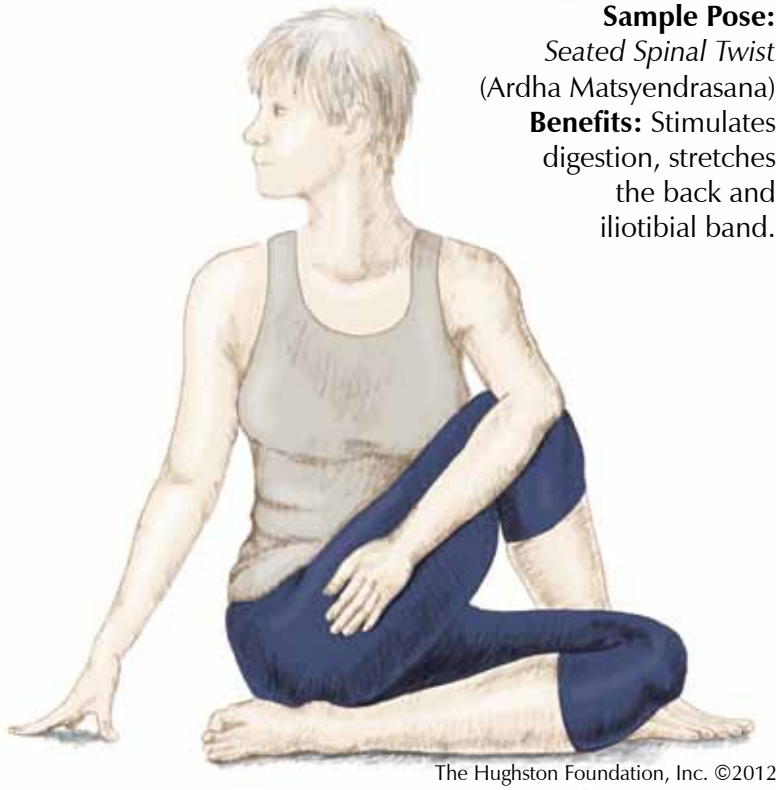
Benefits of Yoga Training for an Athlete

- Improve athletic performance
- Gain flexible strength
- Increase energy
- Increase core muscle strength
- Enhance self confidence
- Create a more balanced body
- Improve mental focus
- Build muscle strength, endurance, and tone
- Boost metabolism and lose weight
- Enhance motivation and productivity
- Improve flexibility and range of motion
- Reduce risk of injury
- Decrease muscle stiffness and recovery time

How does yoga benefit athletes?

Often, athletes are already in good physical condition and have good strength and endurance; so, how does yoga benefit athletes? Athletic yoga, or functional yoga training, can be tailored to the individual for sport-specific purposes. Instructors throughout the US provide sport-specific yoga instruction to both individuals and entire teams. Several professional sports organizations have implemented athletic yoga into their cross-training routines.

In any given sport, an athlete's body is exposed to repetitive stresses. The stresses can create muscle imbalances in strength and flexibility, which means the muscles used most often in a sport can become shortened and strengthened while their opposing muscles, or the muscles that control the opposite motion, can become overstretched and weakened. The imbalance puts an athlete at risk for injury to the weaker muscles and tendons, and causes increased strain on the involved joints. Traditional stretching is static and uniplanar, which means muscles are stretched in a single direction at a constant speed. Muscles in the body work in many different planes of motion and at varying speeds. Yoga stretching is dynamic (active), multiplanar, and stretches multiple muscles at the same time. Athletic yoga can be geared toward the precise stresses and imbalances that result from a specific sport. Additionally, breathing techniques can help to increase the athlete's lung capacity and strengthen the diaphragm and accessory muscles used in breathing.



Sample Pose: *Seated Spinal Twist* (Ardha Matsyendrasana)
Benefits: Stimulates digestion, stretches the back and iliotibial band.

Sample Pose: *High Push-Up or Plank* (Chaturanga Dandasana)
Benefits: Strengthens core muscles, builds muscular strength in chest, arms, shoulders, and triceps.

Sample Pose: *Reclining Pigeon* (Supta Kapotasana)
Benefits: Stretches and opens up the thigh, hip muscles, joints, and groin.

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Health Benefits of Yoga

- Lowers blood pressure
- Reduces stress, improving anxiety and depression
- Relaxes muscles
- Strengthens muscles
- Increases lung capacity
- Enhances mental concentration and focus
- Improves overall fitness and flexibility

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Sport-specific examples

Running: A common problem in runners is the overdevelopment of hamstring muscle strength (the muscles in the back of the thigh) in comparison to quadriceps muscle strength (the muscles in the front of the thigh). Yoga can help balance both hamstring and quadriceps muscle strength and build core strength to prevent hip and spine rotation while you run.

Cycling: Iliotibial (IT) band and piriformis muscle syndrome are 2 common problems with athletes who cycle. Yoga can help open the hip rotator muscles and strengthen the stabilizing muscles of the spine used during cycling. It can also help increase upper body strength.

Meditation and focus

Breathing has a calming effect on the nervous system and can enhance mental and emotional clarity. Breathing and meditation can help the athlete focus under stress, which includes anxiety before and stress during sport participation. Athletes can improve performance by using meditation and visualization techniques that help the athlete focus on positive outcomes and goals.

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Sample Pose: *Seated Forward Bend* (Paschimottanasana)
Benefits: Stretches hamstrings, calf muscles, and lower back.

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Sample Pose: *Bridge* (Setu Bandha Sarvangasana)
Benefits: Strengthens the lower back and upper body muscles; stretches chest, shoulders and neck; helps with tired legs, headaches, backache, and fatigue.

Gout: Causes, Symptoms, and Treatment

Gout is a type of inflammatory arthritis that causes sudden pain, swelling, stiffness, and burning in your joints. Gout can affect anyone, but it is more common in men and in women after menopause. It can occur repeatedly if the condition is not treated.

Causes and risk factors

Gout is caused by high levels of uric acid in the blood. When the uric acid levels become too high, the chemical forms tiny, hard crystals in your joints. The effect is similar to when you put too much sugar in your tea. Eventually, the sugar saturates the tea and the excess sugar falls to the bottom. Uric acid crystals in your joints are extremely abrasive and cause inflammation. Often, high levels of uric acid are caused by improper diet. Excessively drinking alcohol, being overweight, or eating a diet high in purine-rich foods, such as high protein fish and meats can cause excess levels of uric acid. Diuretics, commonly known as water pills can cause excess uric acid production, as well.

Symptoms and diagnosis

Gout often causes a nighttime attack of swelling, tenderness, redness, and sharp pain. Patients often complain that they "awoke and it was there." Gout most often affects the great toe, knee, elbow, ankle, and foot. The pain can be severe enough to prevent walking, and the swelling can be significant enough to restrict joint movement. The symptoms can last anywhere from a few days to weeks. Repeat attacks can be sporadic and not happen for months or years. Uric acid crystals are highly toxic to the joint and can cause severe joint destruction over time.

To diagnose gout, your doctor will ask you questions about your symptoms and examine the joint. The joint is typically red, swollen, and warm to the touch. In fact, the condition is often mistaken for an infection of the joint. Blood tests to check the levels of uric acid can be helpful in diagnosing gout. Your doctor can also draw fluid from the joint and examine it under a microscope for the presence of uric acid crystals. The fluid can also be tested to ensure no infection is present.

Treatment

Gout can be effectively treated with medications. A corticosteroid injection into the joint helps stop the inflammation and ease the pain. Other medicines taken by mouth are then started to help decrease levels of uric acid, and decrease the inflammation long term. In severe cases, an arthroscopic procedure can be performed to clean uric acid from the affected joint.

If you think gout is the cause of pain and swelling in one of your joints, take an over-the-counter anti-inflammatory medicine, such as ibuprofen or naproxen. Avoid taking aspirin, because it can make your symptoms worse. Rest the joint. If your symptoms do not start to improve in a couple of days, you should see a doctor. Your doctor can help you to confirm the diagnosis of gout and treat it to help prevent future attacks. Your doctor can also help identify problems with your diet that you can correct to improve the condition.

Purine-Rich Foods

Purines are present in all foods. Dietitians recommend that gout sufferers eat less than 150 mg of purines daily.

High Purine Foods (contains 100 to 1,000 mg of purine per 100 g serving)

- **Organ meats:** Liver, kidney, brains, (Sweetbreads, pancreas, thymus gland, heart, and neck).
- **Poultry:** Goose and partridge.
- **Seafood:** Sardines, anchovies, mussels, scallops, herring, mackerel and roe.
- **Other sources:** Bouillon, mincemeats, meat extracts, consomme, and gravy.

Moderate Purine Foods (contains 10 to 100 mg of purine per 100 g serving)

- **Meat:** Beef, veal, pork, mutton, venison, chicken, duck, and turkey.
- **Seafood:** Cod, crab, lobster, snapper, salmon, tuna and trout.
- **Other sources:** Yeast, oatmeal, cauliflower, asparagus, peas, spinach, lima & navy beans, and lentils.
- **Alcoholic beverages:** Any alcohol, but especially beer.

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Rabies

Rabies is a deadly viral infection caused by a bullet-shaped virus (of the Rhabdoviridae family) that is often transmitted through the saliva of an infected animal during a bite injury. Rabies becomes fatal when the virus reaches the central nervous system and infects the brain and spinal cord **(Fig. 1).**

Causes and risk factors

Any mammal can transmit the virus to humans, but the most common animals reported to carry the virus are wild animals, such as bats, raccoons, skunks, woodchucks, foxes, coyotes, beavers, and monkeys. Pet and farm animals, such as cats, dogs, ferrets, rabbits, goats, cows, and horses, can also transmit the virus.

If left untreated, a person infected with rabies often does not develop symptoms until the disease progresses. Symptoms can appear within 1 year from the date of infection. By the time the symptoms appear, it is almost always too late to cure the disease, which has a nearly 100% fatality rate.

Signs and symptoms of rabies:

- Fever, chills
- Headache
- Agitation, confusion, hallucinations
- Anxiety, insomnia
- Difficulty swallowing, fear of water (hydrophobia) because of difficulty in swallowing
- Excessive salivation
- Partial paralysis

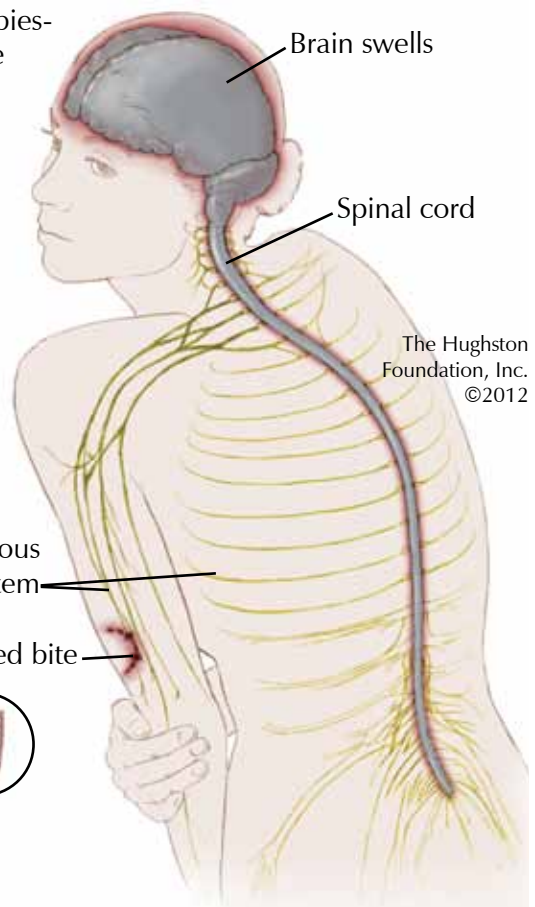
Prevention

If an animal suspected or known to have rabies has bitten you, you should clean the wound and seek medical attention. If you have been infected with the virus, postexposure immunization can be highly effective in preventing rabies. The vaccinations are given in the upper arm soon after exposure. A dose of human rabies immune globulin and a dose of rabies vaccine are given as part of the postexposure vaccination on the day of exposure, followed by 3 additional doses of rabies vaccine.

Immediate medical attention should be sought if any animal has bitten you or someone you know. An educated and informed decision needs to be made between you and your healthcare provider as to whether treatment should be started to prevent rabies.

Sometimes it is not always clear as to whether or not you have been bitten. There have been reports of people being bitten in their sleep by bats. Children or people with disabilities that hamper communication may not be able to reliably report animal bites. If you awaken and discover a bat, or if you find a bat near someone who is unable to report an animal bite, assume a bite has occurred and seek immediate medical attention.

Fig. 1. After a rabies-infected bite, the virus spreads through the nervous system and infects the spinal cord and brain.



Be prepared to answer the following questions:

- What animal bit you? Was it wild or a pet?
- If it was a pet, to whom does the animal belong?
- Can you describe the animal's behavior before it bit you?
- Was the animal provoked?
- Were you able to capture or kill the animal after it bit you?

Consistent with the old adage by Benjamin Franklin that "an ounce of prevention is worth a pound of cure," rabies is best treated by preventing the virus from spreading to the central nervous system once you have been infected. Through prompt medical care, rabies in humans can be prevented. If you are bitten by an animal, immediately clean the wound and seek medical attention. The sooner you take action to prevent rabies, the better the chance you have at stopping the virus from spreading.

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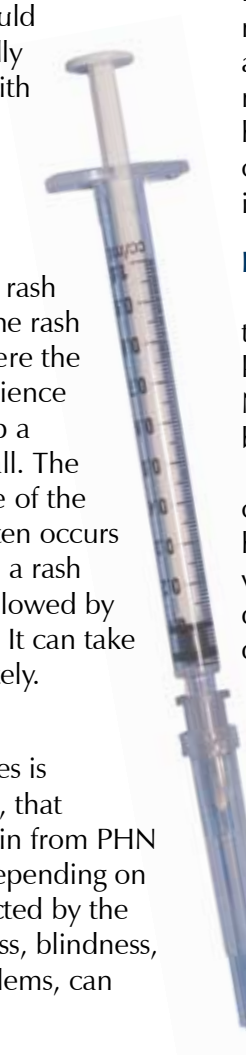
Shingles

Shingles is the common name for *herpes zoster*. It is a painful viral infection of the nerve roots that causes a blistering skin rash. Caused by the same virus (*Varicella-zoster virus*) that causes chickenpox, the rash can affect any part of your body, but it typically wraps from the middle of your back around your side to the front of your chest **(Fig. 1)**. The condition is usually not life threatening, but it can have serious complications and it can be very painful.

Causes and risks factors

After you have chickenpox, the virus lies dormant, or inactive, within the affected nerves of the body. When the virus becomes active again, it only causes shingles, not chickenpox. The reason the virus suddenly becomes active is unclear, but the risk of developing shingles increases if you are over the age of 60, if you had chickenpox before the age of 1, or if your immune system has been weakened by illness or disease, by stress, or by the use of certain medications.

Shingles can be contagious and can be passed through direct contact with the rash to someone who hasn't had chickenpox or the chickenpox vaccine. Until the blistering rash scabs over, you are contagious and should avoid physical contact with people, especially pregnant women, newborns, and anyone with a weakened immune system.



Symptoms

Flu-like symptoms, such as fever and chills, aches, headache, fatigue, joint pain, and muscle weakness, can occur before the rash appears and can continue while you have the rash and blisters. Additionally, depending on where the rash occurs on the body, you can also experience changes in taste and vision. You can develop a severe rash or you may develop no rash at all. The virus often affects a small section of one side of the body. Pain, burning, itching, and tingling often occurs before the rash appears. Following the pain, a rash in the form of a band or strip can appear followed by fluid-filled blisters that eventually crust over. It can take 2 to 4 weeks for the blisters to heal completely.

Complications

The most common complication of shingles is postherpetic neuralgia (PHN), or nerve pain, that continues after the blisters are gone. The pain from PHN can last for months or years. Additionally, depending on where the rash appears and the nerves affected by the virus, other complications, including deafness, blindness, facial paralysis, and other neurological problems, can occur.

Fig. 1. Typical rash and blisters associated with the shingles virus.

Photo courtesy of Joshua E. Lane, MD ©2012

Treatment

There is no cure for shingles, but prompt treatment can reduce pain, speed healing, and reduce the risk of complications. The shingles virus often runs its course in 2 to 4 weeks. Your doctor can prescribe an antiviral medication that should be taken as early as possible, such as when the pain starts and before the rash appears. Pain medication can help to reduce pain and antihistamines can help to reduce itching. Soothing baths and lotions, such as calamine lotion, can also be used to help relieve pain and itching.

Prevention

To prevent spreading the virus to others, you may need to be isolated while the virus is active. Your skin should be kept clean and you should dispose of contaminated items. Nondisposables, such as linens, should be disinfected before you reuse them.

If you are over the age of 60 and have had the chickenpox or the chickenpox vaccine, you may want to have a shingles vaccine. However, because the shingles vaccine carries its own complications and risks, you should discuss your need for the vaccine with your doctor. Your doctor can help you weigh the risks and determine if the vaccine is the best option for you.

Shingles is usually not life threatening, but it can be extremely painful and it can have serious complications, depending on where the virus affects the body. Early recognition of the virus and prompt treatment can help speed the course of the virus, help prevent others from becoming infected, and reduce the risks of complications.

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