Snake Bites

About 25 species of venomous (poisonous) snakes are native to the United States. The venomous snakes include pit vipers (rattlesnakes, copperheads, and cottonmouths) and coral snakes. Of the roughly 45,000 snakebites in the United States each year, fewer than 8,000 are by venomous snakes, and about six people die. In about 25% of all pit viper bites, venom is not injected. Most deaths occur in children, older people, and people who are untreated or treated inappropriately. Rattlesnakes account for about 70% of poisonous snakebites in the United States and for almost all of the deaths. Copperheads and, to a lesser extent, cottonmouths account for most other poisonous snakebites. Coral snake bites and those from imported snakes are rare.

The venom of rattlesnakes and other pit vipers damages tissue around the bite. Rattlesnake venom may produce changes in blood cells, prevents blood from clotting, and damages blood vessels, causing them to leak. These changes can lead to internal bleeding and to heart, respiratory, and kidney failure. The venom of coral snakes affects nervous system activity but causes little damage to tissue around the bite. Most bites occur on the hand or foot.


Coral snakes are difficult to identify because many nonpoisonous snakes have similar appearances.

Symptoms

The symptoms of snake venom poisoning vary widely, depending on the size and species of snake, the amount and toxicity of the venom injected, the bite's location, and the victim's age and underlying medical problems. Usually, bites by most pit vipers rapidly cause pain. Redness and swelling usually follow within

20 to 30 minutes and can progress to affect the entire leg or arm within several hours. The person bitten by a rattlesnake may experience tingling and numbness in the fingers or toes or around the mouth and a metallic or rubbery taste in the mouth. Other symptoms include fever, chills, general weakness, faintness, sweating, and nausea and vomiting. Breathing difficulties can develop, particularly after Mojave rattlesnake bites. The person may have a headache, blurred vision, drooping eyelids, and a dry mouth.


A rattlesnake bite on the index finger is characterized by little swelling but severe bruising of the skin, which appears tight and discolored. Blood clots are seen in the surrounding blood vessels.

Moderate or severe pit viper poisoning commonly causes bruising of the skin 3 to 6 hours after the bite. The skin around the bite appears tight and discolored; blisters, often filled with blood, may form in the bite area. Without treatment, tissue around the bite may be destroyed. The bitten person's gums may bleed, and blood may appear in the person's vomit, stools, and urine.

Coral snake bites usually cause little or no immediate pain and swelling. More severe symptoms may take several hours to develop. The area around the bite may tingle, and nearby muscles may become weak. Muscle incoordination and severe general weakness may follow. Other symptoms include visual disturbances and increased saliva production, with speech and swallowing difficulties. Breathing problems, which may be extreme, may follow.

Diagnosis

Emergency medical personnel must try to determine whether the snake was poisonous, what species it was, and whether venom was injected. The bite marks sometimes suggest whether the snake was poisonous. The fangs of a poisonous snake usually produce one or two large punctures, whereas the teeth of nonpoisonous snakes usually leave multiple small rows of scratches. Without a detailed description of the snake, the doctor may have difficulty determining the

particular species that caused the bite. Envenomation is recognized by the development of characteristic symptoms. People who are bitten are generally kept in the hospital for 8 to 12 hours to see if any symptoms develop. Doctors perform various tests to assess the effects of the venom.

Treatment and Prognosis

Anyone bitten by a poisonous snake should be moved beyond the snake's striking distance, kept as calm and still as possible, and taken to the nearest medical facility immediately. The bitten limb should be loosely immobilized and kept positioned below heart level. Rings, watches, and tight clothing should be removed from the area of the bite. Alcohol and caffeine should be avoided. Tourniquets, ice packs, and cutting the bite open are not recommended and are dangerous.

If no venom was injected, treatment is the same as for any puncture wound. If venom was injected and symptoms indicate a serious bite, venom antidote (antivenom) is the most important part of treatment and is more effective the sooner it is given. Antivenom neutralizes venom's toxic effects. It is given intravenously and is available for all native poisonous snakes. Pit viper antivenom made from horse serum frequently causes serum sickness (an immune system reaction against foreign protein); newer antivenom made of purified antibody fragments from sheep is much safer.

A person with low blood pressure is given fluids intravenously. If problems with blood clotting develop, the person is given fresh frozen plasma, concentrated clotting factors (cryoprecipitate), or platelet transfusions.

What Is Serum Sickness?
Serum sickness is a reaction by the immune system against large amounts of foreign protein that have entered the bloodstream. A common source of such foreign protein is horse serum, an ingredient found in many venom antidotes (antivenoms) that are used to treat poisonous snake and spider bites and scorpion stings. Symptoms of serum sickness include fever, rash, and joint pains. Rarely, kidney damage and death can occur. Doctors treat serum sickness with antihistamines, such as diphenhydramineSome Trade Names
BENADRYL
NYTOL
SOMINEX

, and corticosteroids. Antivenoms that do not contain horse serum are unlikely to result in serum sickness.

Prognosis depends on the person's age and overall health and on the location and venom content of the bite. Almost everyone bitten by a poisonous snake survives if treated early with appropriate amounts of antivenom.