



A Monthly e Magazine
ISSN:2583-2212

Popular Article

October 2024 Vol.4(10), 3904–3908

Snake Bites Management & Treatment in Livestock

Dr. Deepak Kumar Chaurasia

Assistant Professor, Department of Veterinary Gynaecology and Obstetrics, IVSAH, SOA-DU, Bhubaneswar, Odisha – 751030, India
<https://doi.org/10.5281/zenodo.14002719>

A large percentage of India's population resides in rural areas and is mostly dependent on agriculture where livestock production dominates. Farmers in rural areas are sometimes faced with livestock diseases and problems like snakebite. Cattle are believed to be more vulnerable to snakebite than goats. Snakebite can be a serious problem to cattle in summer when it is warm and favorable for snakes to be out of their holes hunting on pastures where cattle graze. During grazing, cattle are at a high risk of coming in contact with snakes. Snakebite has been reported as a serious problem for livestock all over the world. Poisoning by snakebite requires an immediate medical attention. Some farmers are either resource poor or stay far away from urban areas and they cannot easily acquire modern medicine for their livestock. Such farmers usually tend to use traditional remedies. Snake bites are common in most rural areas, particularly in forest and forest fringe villages. Deaths of livestock due to poisonous snake bites are a major cause of death in our forest covered area despite being highly preventable. Snake bite in animals generally occurs during grazing or hunting or while playing in the garden. Most of the cases of snake bite have been reported in dogs and horses. Poisoning from snake venom in animals is an emergency which requires immediate attention or otherwise delayed and inadequate treatment may lead to untoward consequences. There are nearly 216 species of snakes in India in which 60 are considered poisonous. The most poisonous, medically important species of India distributed widely throughout the country, nearly one lakh animals in the world fall prey to venomous snake bite every year. In India, snake bite is a common and important cause of accidental death in livestock. Exact data on snake bite in livestock is not available in the country. However, this is very common death cause in animals especially in rural areas of India. Snake bite is common in animals such as cattle, sheep, goat and dogs. Snake venom is a mixture of toxins. Depending on the type of snake the venom constituents vary. The animals exhibit various symptoms like cardio pulmonary dysfunction, local tissue damage, blood coagulation defects, ataxia etc., depending on type of snake bite. Poisoning

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from snake venom in animals is an emergency which requires immediate attention or otherwise delayed and inadequate treatment may lead to untoward consequences so snake bite with Envenomation requires immediate attention and treatment is must. Russell's viper is one common poisonous snake in Indian subcontinent.

Many snake bites can cause injury or death in livestock, and treatment depends on the type of animal bitten and its sensitivity to that particular snake's venom. Horses are at the top of the sensitivity list, followed by sheep, cows, goats, dogs (and humans), pigs and cats.

How To Identify Snake Bites

When a sheep is bitten by a poisonous snake, the animal will experience difficulty swallowing, the tongue will protrude simply from the mouth and the animal will dribble saliva. This may be followed by the expulsion of the stomach contents through the nostrils and the sheep lying down, unable to move. Death can occur as a result of respiratory failure, if bitten by a cobra, or the animal could drown in its own saliva. For goats, symptoms are similar to those of sheep, though goats show less sensitivity to snake venom. However, goats can die from puff adder bites. Surprisingly little research has been done on snake bites in cattle.

However, although the animals are extremely sensitive to venom, it would appear that death occurs only with multiple bites. Other factors that come into play include the amount of venom injected; the size of both the cow and the snake; the age and health of the animal. A healthy cow is less likely to succumb to the effects of venom than an older individual in poor health. Where it was bitten is also important. Typically, bites occur on the head, face and muzzle area while the animal is grazing, and are far more serious than bites on the legs. Cattle that have been bitten often show signs of a "goose stepping" type of leg action.

Bite Types

Venomous snakes fall into two categories: elapids, which include cobras and mambas, and vipers, such as puff adders. Elapids have short fangs and tend to "chew" their venom into their victim.

The poison affects the nervous system and kills by paralyzing the respiratory system. Vipers have long, hinged hypodermic needle-like fangs that penetrate the flesh, delivering venom deep into the tissue. This causes enormous damage to blood vessels and loss of tissue. Localized bleeding and tissue necrosis can occur even in animals which make a full recovery. In some cases, persistent lameness may occur. However, many snake bites in livestock are thought to be "dry bites", where no venom is injected. A snake can determine the size of an animal and its venom is a valuable resource it doesn't waste indiscriminately.

Therefore, a dry bite is delivered as a warning. It's also important to remember that not all snakes are venomous. Unless you can positively identify the snake, assume that it has delivered a



dry bite if no symptoms materialize. Unfortunately, every year thousands of harmless snakes are killed, when, in fact, they are one of the best rodent predators a farmer could wish for.

First Aid

Before calling the vet, try and determine if the animal has actually been bitten by a venomous snake. Although it may be difficult to locate the bite due to the hair on the animal's body, bleeding or swelling are good signs to look out for. A bite from a venomous snake will leave two quite distinctive puncture wounds, which will bleed profusely in the case of a puff adder bite.

A bite from a non-venomous snake will probably leave no teeth marks, unless it was from a large python. Teeth marks result in multiple puncture wounds and copious bleeding.

Notes

- If the animal has been bitten in the nostrils or muzzle, these areas will swell, making it difficult for the animal to breathe. Pass a piece of clean tubing up the nostrils to maintain an open airway. Where the animal shows signs of paralysis, breathing down the tube will help keep it alive until the vet arrives.
- Keep the animal calm, as an increased heart rate will spread venom through the body much more rapidly. Let the vet come to the animal rather than trying to walk it to a more accessible spot, as this will only increase its heart rate.
- Never cut the wound and try to suck out the venom. If you have a cut in your mouth, you'll be poisoned as well.
- In the case of a cobra bite (excluding the Mozambique spitting cobra), apply a pressure bandage over the bite and wrap it up to the top of the limb. This is not a tourniquet as its aim isn't to stop blood flow, but to slow down the venom's absorption into the lymph system. (If applied to a viper bite, where swelling develops, this will do more harm than good).
- For viper and spitting cobra bites, simply keep the animal calm, and seek veterinary treatment as quickly as possible.
- Do not apply a hot or cold compress, as this could damage the tissue even further.
- Do not administer any form of alternative treatment. The only proven treatment for snake bites is anti-venom.
- Your vet should be able to determine whether the animal was bitten by a snake, whether or not venom was injected, what type of snake it was and if the animal requires anti-venom. Some animals may recover simply with supportive care.

After The Bite

Most bites are on the lower legs, unless it's a curious individual that approaches the snake to smell it. A bite on the leg shows up as a swollen leg. The biggest problem would be infection in those tissues.



The danger/potency of a bite depends on amount of venom injected and the type of toxin which can vary, depending on the species or variety of snake. It also makes a difference where the bite is located. A bite on the leg is usually not as dangerous as a bite on the face. Swelling from a bite on the nose, for instance, may cause death from suffocation if it shuts off the air passages and the animal cannot breathe. If you see the animal bitten, or suspect it was bitten, treat with an antibiotic. There are bacteria in the snake's mouth, and bacteria that proliferate in damaged, dying tissue. Most common antibiotics will work to prevent and combat these infections; you can use penicillin, oxytetracycline, ampicillin or any other broad-spectrum antibiotic. Some animals develop a fever and/or septicaemia from the infection; antibiotics can help prevent these problems. Immediate treatment with anti-inflammatory drugs to reduce inflammation, pain and swelling can make a big difference, but it's sometimes hard to treat cattle early because you might not see them as soon as you might notice a snake-bitten pet.

In humans, treatment within the first couple of hours is generally accomplished, but we rarely get that opportunity with cattle. There are anti-venom products that work, but those need to be infused within the first few hours. They are expensive, and they don't cover every type of snakebite. These products are not very practical for adult cattle because it would take multiple vials for an animal this large.

How To Recognize a Snake Bite

If livestock/ pet is unfortunate enough to have an encounter with a snake you can help by being aware of the signs and symptoms of snake bite, and getting the affected animal to the hospital as quickly as possible. Dogs, cats and horses are all at risk, although curious dogs are the most frequently affected. The first signs of snake envenomation are usually excitement, trembling, salivation and vomiting, gradually developing into weakness, wobbly gait and eventually paralysis. Afflicted dogs often have dilated pupils and slow light reflex, with clotting problems in their blood. Depending on the type of snake and how much venom has been injected, an animal bitten by a snake may show any of the following symptoms: -

- Localized swelling and irritation
- Vomiting
- Drooling and trembling
- Dilated pupils
- Involuntary bladder or bowel release
- Red or brown discolouration of urine
- Rapid breathing and/or panting
- Bleeding from bite wounds or bloody diarrhoea



- Collapse. An animal may collapse immediately but then apparently recover, then develop symptoms over the course of the next hour
- Paralysis (starting with the hind legs and progressing towards the head)

Treatment

The affected animal in case of cow is treated with 40 ml of polyvalent snake venom antiserum along with 2000 ml of normal saline is administered intravenously followed by Dexamethasone phosphate 0.5 mg/kg and 1000 ml of 5% dextrose. 5 ml of Tetanus toxoid is also administered subcutaneously as single dose. In addition, injection ceftiofur sodium at the dose rate of 1mg per kg body wt. is given intramuscularly twice a day for 3 days. The animal is kept under close observation for careful monitoring.

In case of dog, it is treated with lyophilized polyvalent anti-snake venom. The clear supernatant obtained after dilution is slowly administered intravenously in a shot of 1ml at an interval of 3-4 minutes up to 10 ml. In addition, 500 ml of 5% DNS each is administered intravenously to the dog. Dexamethasone at the dose of 2mg/kg is administered i/v and Atropine sulphate at the rate of 0.04mg/kg i/m. Further Enrofloxacin at the dose of 5 mg/kg, i/m and tetanus toxoid 2ml i/m are given. Then the animal is kept under observation After 1 hr. If it is observed that dog is passing blood in the urine, Botropase 1ml i/v is administered to dog. The antibiotic therapy is continued for 5 days.

NB

Snake venoms are complex mixture of proteins and peptides, consisting of both enzymatic and non-enzymatic compounds. Snake venoms also contain inorganic cations such as sodium, calcium, potassium, magnesium, and small amounts of zinc, iron, cobalt, manganese, and nickel. The other components of snake venoms are glycoproteins, lipids, and biogenic amines, such as histamine, serotonin and neurotransmitters (catecholamine and acetylcholine). The clinical symptoms of pale conjunctival mucous membrane, incoordination, frothy salivation, dullness, and tympani with low pH were in line with the reports. An uneventful recovery was recorded following the treatment with antiserum along with antibiotics, dexamethasone and tetanus toxoid. Broad-spectrum antibiotics, tetanus toxoid and polyvalent snake venom antiserum have earlier been tried successfully for the treatment of snakebite envenomation in dogs, cats and other animals. The toxicity of snake venom is attributed mainly to proteolytic enzymes viz., phosphatidase, cholinesterase and neurotoxin. Neurotoxin present in the snake venom affects the central nervous system and results in failure of cardiovascular system. Proteolytic enzymes are responsible for local changes in permeability leading to edema, blistering, bruising and local necrosis.

