Transcript Details
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Navigating the Snake Bite Treatment Algorithm

Announcer:
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This medical industry feature, titled "Navigating the Snake Bite Treatment Algorithm" is sponsored by BTG Specialty Pharmaceuticals.

Please stay tuned for Important Safety Information at the end of this episode and see the full prescribing information at crofab.com

Here's your guest, Dr. Spencer Greene.

Dr. Greene:
I'm Dr. Spencer Greene, a medical toxicologist and an emergency room physician at Bayou City Medical Toxicology and Emergency Medicine Consultants in Houston, Texas. And today I'd like to talk about the management of pit viper bites using the Unified Treatment Algorithm. But first, I want to talk about what not to do. Many of the treatments that were previously recommended have been proven to be useless at best, and dangerous at worst. Extraction devices are still sold in many sporting goods stores, but we know now they don't actually remove venom; all they do is cause a negative pressure injury, so they should not be used. Similarly, prolonged application of ice or cold packs can cause tissue damage, so we don't recommend it. Nonsteroidal anti-inflammatory drugs such as ibuprofen or naproxen can cause hematologic consequences and should not be used in the treatment of pit viper bite pain. Prophylactic antibiotics are not necessary because infection is rarely seen following pit viper envenomation. Corticosteroids and antihistamines should not be used routinely in the management of pit viper bites. They may be used in the case of an allergic reaction to the venom or the antivenom. Electric shock is not recommended because it can cause tissue damage and it has been known to cause fatalities. Blood products should not be administered routinely following snake bites. Prophylactic fasciotomy should never be done for snake bites. And tourniquets, as useful as they are for trauma, should not be used in snake bite because they can cause significant tissue injury. It's also important to know that we never need someone to bring the actual snake to the hospital for the patient to be treated correctly. Remember, CroFab can be used to treat envenomations from any North American pit viper bites. If you make the diagnosis of pit viper envenomation, you don't need to know the species. Now if you can quickly and safely take a picture of the snake, great; but don't delay treatment – don't delay transport to get a picture or to bring the snake, and don't put people at risk by bringing a snake to the hospital. The Unified Treatment Algorithm is a paper prepared by toxicologists and other snake bite experts. It's available as an open access document online, and it looks pretty intimidating when you see it from afar, but if you look carefully, it provides a really simple, step-by-step decision tree for how to assess and treatment a patient who's been bitten by a snake. The first step is assessing the patient. And the first thing you want to do is identify and correct any life threats. Ensure that the patient has a patent airway. Ensure they have adequate oxygenation and ventilation, and ensure they have good circulation. You want to look for any local effects from the bites. So you want to mark the leading edge of the tenderness and swelling, and you want to reassess them every 15 to 30 minutes. We also immobilize and elevate the affected extremity to reduce the hydrostatic pressure. We want to obtain the labs that can tell us if there's any evidence of hematologic toxicity, so check a prothrombin time, check a complete blood cell count, and check a fibrinogen. If they're tetanus immunization is not up to date, now's a good time to do it. And now is also a good time to contact your Poison Control Center or your regional snake bite expert for assistance. You're going to look for signs of envenomation. And envenomation can cause one or more of the following: Local effects, which can including swelling, tenderness bruising, hemorrhagic blebs; they can cause abnormal labs, including elevated prothrombin time, decreased fibrinogen, and/or decreased platelet count; and you can get systemic toxicity, which can include low blood pressure, airway swelling, refractory vomiting, and in some pit viper species, neurotoxicity. If the patient has no signs or symptoms of an envenomation, he or she may have what we call a dry bite, which happens in a minority of bites. These patients don't require antivenom; they require monitoring for a minimum of eight hours because sometimes patients who appear to have a dry bite actually develop symptoms later on. Remember, snake bites are a dynamic process. So we watch them for a minimum of

eight hours. We're going to recheck labs, typically seven to eight hours after the initial labs. If they have no development of signs and symptoms, it's a dry bite. Again, it doesn't require antivenom. If they do develop signs and symptoms, we proceed with the algorithm. So, does this patient have signs of an envenomation? Yes, ecchymosis, bruising, and swelling are all indicative of a pit viper bite. Signs of progression can include local effects such as swelling or bruising or development of hemorrhagic blebs. We may have lab abnormalities, including an elevated prothrombin time, a decreased fibrinogen, or a decreased platelet count. We may also have systemic toxicity, including low blood pressure, airway swelling, refractory vomiting or diarrhea, and in some species, neurotoxicity. The presence of any one of these is an indication to go ahead and treat with CroFab. If patients have signs of an envenomation, we recommend early and aggressive treatment with CroFab. Even mild bites can turn much more serious if they go untreated or undertreated. In the photograph here, you see a toe that shows a little bit of damage. Not surprisingly, many physicians would minimize the significance of this bite; however, untreated, within a few days, it can be much more serious, causing irreversible tissue damage. Remember, CroFab works by preventing tissue damage. And once the damage has occurred, nothing can reverse it. So treat early, treat aggressively. Once you've determined that the patient requires CroFab, there's three simple steps for reconstitution. Inject 18 mL of sterile saline into the vial. Inject it slowly to prevent bubbling. Take the vial and manually invert it up to two times per second. You don't want to shake the vial because that can cause denaturation. When you're done, there should be no particulate matter; however, the liquid won't be clear, it will be opaque. However many vials you prepare, they're combined into a 250 mL bag. We typically start with four to six vials, although severe envenomations may require an initial dose of up to 12 vials. We infuse the CroFab at a rate of 25 to 50 mL per hour for 10 minutes. So long as the patient tolerates that, we go up to a rate of 250 mL per hour. So, overall, it should take a little more than one hour to give the CroFab. You want to determine if the patient has achieved initial control. If they have not achieved initial control, you're going to go ahead and bolus another four to six vials. As a reminder, initial control means we've stopped progression of the local effects, we've addressed and corrected any systemic toxicity, and any lab abnormalities that were present are not trending toward normal. If you've achieved initial control, there shouldn't be any unbound venom. Any unbound venom can cause additional local or systemic toxicity, and that would be an indication that you've not achieved initial control. If all the venom is bound, there should be no progression of the local findings, there should be no worsening of the lab abnormalities, and there should be no more systemic toxicity. After we've achieved initial control, we're going to continue to monitor the patient for 18 to 24 hours. We're going to make sure their pain is being controlled, and we're going to start maintenance dosing of CroFab. Maintenance dosing consists of two vials every six hours for three doses starting six hours after you've achieved initial control. The reason we do maintenance dosing is it prevents any local recurrence and it significantly reduces the incidence of hematologic recurrence compared to people who do not have scheduled maintenance dosing. While the patient's receiving a maintenance dosing, he or she will be monitored in the hospital for another 18 to 24 hours. It's important to distinguish people who have what we call redistribution edema from the elevation versus patients who actually have progression of the local findings. We redistribution edema, there shouldn't be any tenderness or ecchymosis. With progression of the local findings, they'll be more tender proximally. Once the patient's received his or her maintenance CroFab, he or she may be eligible for discharge. I'm comfortable sending a patient home, so long as there's no medical reason to be in the hospital, and so long as there's no worrisome lab abnormalities. We also tell the patients not to take NSAIDs, not to engage in any activity that can predispose it to bleeding or bruising. It's also important that they follow up with someone as a regularly scheduled appointment, and to contact a physician right away if they have any worrisome signs or symptoms such as rash, fever, joint pain, any abnormal bleeding, bruising, or any other concerns. They can also call their regional Poison Center if they have any questions.

Announcer:

Let's now hear the indication and important safety information for CroFab®.

INDICATION

CroFab® Crotalidae Polyvalent Immune Fab (Ovine) is a sheep-derived antivenin indicated for the management of adult and pediatric patients with North American crotalid envenomation. The term crotalid is used to describe the Crotalinae subfamily (formerly known as Crotalidae) of venomous snakes which includes rattlesnakes, copperheads and cottonmouths/water moccasins.

IMPORTANT SAFETY INFORMATION

CONTRAINDICATIONS

Do not administer CroFab® to patients with a known history of hypersensitivity to any of its components, or to papaya or papain unless the benefits outweigh the risks and appropriate management for anaphylactic reactions is readily available.

WARNINGS AND PRECAUTIONS

Coagulopathy: In clinical trials, recurrent coagulopathy (the return of a coagulation abnormality after it has been successfully treated with

antivenin), characterized by decreased fibrinogen, decreased platelets, and elevated prothrombin time, occurred in approximately half of the patients studied; one patient required re-hospitalization and additional antivenin administration. Recurrent coagulopathy may persist for 1 to 2 weeks or more. Patients who experience coagulopathy due to snakebite should be monitored for recurrent coagulopathy for up to 1 week or longer. During this period, the physician should carefully assess the need for re-treatment with CroFab® and use of any type of anticoagulant or anti-platelet drug.

Hypersensitivity Reactions: Severe hypersensitivity reactions may occur with CroFab®. In case of acute hypersensitivity reactions, including anaphylaxis and anaphylactoid reactions, discontinue infusion and institute appropriate emergency treatment. Patients allergic to papain, chymopapain, other papaya extracts, or the pineapple enzyme bromelain may also have an allergic reaction to CroFab®. Follow-up all patients for signs and symptoms of delayed allergic reactions or serum sickness (e.g., rash, fever, myalgia, arthralgia).

ADVERSE REACTIONS

The most common adverse reactions (incidence ≥5% of subjects) reported in the clinical studies were urticaria, rash, nausea, pruritus and back pain. Adverse reactions involving the skin and appendages (primarily rash, urticaria, and pruritus) were reported in 12 of the 42 patients. Two patients had a severe allergic reaction (severe hives and a severe rash and pruritus) following treatment and one patient discontinued CroFab® due to an allergic reaction. Recurrent coagulopathy due to envenomation and requiring additional treatment may occur.

To view the full prescribing information visit Crofab.com.

This program was sponsored by BTG Specialty Pharmaceuticals. If you missed any part of this discussion or to find others in this series, visit ReachMD.com/SnakeVenom. This is ReachMD. Be part of the knowledge.