REPTILE EMERGENCY CARE

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Acute trauma such as bleeding, thermal injury, attack by other household pets or cage mates and the ingestion of harmful or toxic material while free roaming in the house are the most common presentations for emergency care. Life-threatening emergencies don’t often occur, but because reptiles are generally stoic, owners may not be aware that they are sick until they are in critical condition, which leads to an emergency visit. Unfortunately, these are not acute emergencies but chronic disorders that suddenly become a crisis. These critical reptiles are challenging to diagnose and even more challenging to save.

These mystery reptile emergencies are often related to improper husbandry resulting in clinical diseases such as nutritional secondary hyperparathyroidism and malnutrition. Infectious diseases such as respiratory disease, infectious stomatitis and dermatitis are also seen and are often the result of poor husbandry. Finally, emergencies related to reproductive activity in reptiles are often seen including dystocias and cloacal and hemipenal prolapse.

Reptiles that present in a moribund state usually will not survive even with aggressive therapy. However, reptiles that are still responsive likely can be stabilized. Clinicians must familiarize themselves with the unique supportive needs of the critical reptile patient, including thermal requirements, fluid therapy, antimicrobial use and dietary needs to help provide appropriate emergency care.

SIGNALMENT AND HISTORY

Sometimes the signalment and history can be the most important part of the evaluation as it can steer the veterinarian toward a differential list.

Often, the presenting complaint is something that is obviously wrong -- bleeding, a broken limb, cloacal prolapse, trauma from interaction with another family pet, exposure to toxins -- and can be easily recognized by the owner. Or, the reptile may be presented for vague symptoms such a lethargy or anorexia. These cases are the most challenging as these reptiles are often fragile, and the etiology for their condition is unknown. These are the cases where the signalment and history are invaluable.

Important information to gather includes type of reptile, age, and sex; whether the reptile is captive or wild caught; how long the owner has had the reptile; history prior to current owner; any known trauma; exposure to toxins (heavy metal, house plants, cleaning products, insecticides, rodenticides, paint, other noxious gases); whether the reptile is allowed to roam free in the house; if there has been any exposure to new reptiles or exposure to other pets or children; whether anything new has been introduced, including a different cage, food, cage mate; diet, frequency of feeding, supplementation, water; how thermal requirements are met; what type of substrate is used; whether the reptile is a breeding animal and if there has been any reproductive activity, etc.

PHYSICAL EXAMINATION AND DIAGNOSTICS

In critical cases, the veterinarian must work quickly to check vital areas such as the oral cavity, coelom, and cloaca. The veterinarian must be ready to treat the patient for shock after the brief exam. Some situations may require treating a specific problem immediately -- without an initial exam -- due to the seriousness of a condition, such as bleeding, inability to breath, or the general debilitated state.

Obtain diagnostic information as permitted by the patient’s condition. If possible try to collect a complete blood count, blood chemistries and culture and sensitivity if indicated prior to treatment. Once a patient is stabilized other diagnostic testing such as fecal analysis, radiographs, ultrasound, cytology, and endoscopy, can be pursued.

THERMAL CONSIDERATIONS

Reptiles are unique in they are poikilotherms and thus rely on environmental sources to maintain core body temperature. With greater than 7500 species of reptiles, it is difficult to know the preferred temperatures for each species presented. However, most reptiles can be maintained successfully at temperatures between 75-85 °F. Sick reptiles should be kept at higher environmental temperatures (80-90 °F) to stimulate the immune system. It is important to warm the critical reptile patient to a preferred core body temperature prior to initiating therapeutics. When hospitalized for emergency treatment reptiles should be provided with supplemental heat such as incubators, heating blankets, or radiant heat. Caution must be taken not to overheat the reptile patient as when weak and debilitated they may not be able to move away from off of a heat source.

THERAPEUTICS

Treatment for all emergency patients presented will be influenced by the condition of the reptile upon presentation. Critically ill reptiles must be treated cautiously to avoid stressing them, which may result in death. Providing a warm/humid, dark and quiet environment (WDQ) is vital therapy for any reptile presented in an emergency case (except head trauma cases, in which increased environmental temperatures is not recommended).

FLUID THERAPY

Reptiles that present in an emergency often are dehydrated. Fluid therapy is one of the most valuable components of emergency therapeutics. Initially it may be less stressful to give subcutaneous fluids, intraocoelomic fluids or epicocelomic fluids at 15-25 ml/kg/day. This can be followed later -- once the patient is a little more stable -- by the placement of an intraosseous or intravenous catheter if necessary.1,2
Techniques for fluid therapy in reptiles are reviewed elsewhere.\textsuperscript{1,2} The daily fluid volumes can be divided and given at intervals through the day. Mild hypotonic fluid solutions such as one part lactated ringers mixed with two parts 2.5% dextrose and 0.45% sodium chloride are recommended, however lactated ringers solution and other fluid solutions used in traditional small animal practices can also be used.\textsuperscript{1,2}

Many reptiles will benefit from soaking in warm water baths as an effective way to re-hydrate. This is a minimally stressful method of hydration, which also encourages reptiles to defecate. Keep the water shallow when soaking to ensure the reptile does not drown. Oral fluids can also be given with gentle assistance and encouragement. However, this author feels stomach tubing fluids is stressful to reptiles (unless a pharyngostomy tube is in place) and other routes are generally safer for the debilitated reptile.

**ANTIBIOTIC AND OTHER EMERGENCY DRUGS**

Once properly hydrated and warmed to a preferred temperature, critically ill reptiles may benefit from broad-spectrum antimicrobials given as part of the initial support treatment and prior to obtaining a diagnosis. Reptiles are prone to infections with gram negative bacteria, but anaerobic organisms may also be present. Depending on presentation, common antimicrobials this author may use in emergency reptile situations include:

- **Amikacin**: 2.5-5.0 mg/kg i.m. or s.c. q 48-72 hr. Ensure that the animal is well-hydrated prior to and during treatment.
- **Enrofloxacin**: 5-10 mg/kg i.m., s.c., or p.o. q 24-48 hrs. Subcutaneous or intramuscular routes initially, followed by oral treatment seems to be the most effective method. Be aware that parenteral dosing may cause damage to the skin and/or muscle, resulting in skin color changes. Giving an injection of subcutaneous fluid then placing the initial injection of enrofloxacin into the fluids will help to minimize tissue damage.
- **Ceftazidime** 20-40 mg/kg i.m. or s.c. q 48-72 hrs.
- **Metronidazole** 20 mg/kg p.o. q 24-48 hrs.
- **Trimethoprim sulfa** 30 mg/kg p.o. q 24-48 hrs.

The author often uses combination therapy to gain broader spectrum and if indicated by bacteria sensitivity (e.g. enrofloxacin and ceftazidime or amikacin and ceftazidime).

Steroids (Dexamethasone at 1-2 mg/kg i.m. or i.v.) are useful in the critical patient and may be given as a single dose for shock and trauma situations.

Other therapeutics are indicated in certain emergency presentations as they are for other small animal emergencies. A review and reference for these therapeutics are found in Carpenter et al.\textsuperscript{1}

**NUTRITIONAL SUPPORT**

Assist feeding or tube feeding can be valuable in the recovery of critical reptiles. Since reptiles are uricotelic excessive protein intake when dehydrated and debilitated may damage kidneys and predispose them to gout. Therefore, alimentation should only be initiated once the patient is stabilized and hydrated. With most reptiles, nutritional support is not necessary for 24-48 hours after presentation. Snakes being treated with potentially nephrotoxic drugs such as amikacin may best be fed only after finishing the antimicrobial course. If a critical patient is eating, tube feeding may not be necessary and can be very stressful, so evaluate the benefit:risk ratio carefully. Carnivorous and omnivorous reptiles can be fed (with assistance) smaller than normal prey items such as pre-killed crickets or rodents. Herbivorous reptiles can be assisted in eating finely-chopped leafy greens or their normal diet blended and fed with a syringe. If they are non-receptive to assisted feeding and force feeding is too stressful, a stomach tube may be passed and feline or canine enterals can be used for carnivorous and omnivorous reptiles. For herbivorous reptiles, human enterals (high fiber versions) can be used.

Stomach volumes for reptiles are estimated to be 2% of body weight (20ml/kg). Start with small amounts (5-7 ml/kg) of a diluted tubing formula and gradually increase over time.

In some chelonians such as tortoises or large lizard species (monitors, tegus), it is very difficult to pass a feeding tube without sedation. If continued alimentation is necessary in these patients, the placement of a pharyngostomy/esophagostomy tube may be necessary.\textsuperscript{3} Indwelling pharyngostomy/esophagostomy tubes facilitate feeding, hydration, and administration of medications while minimizing stress to the patient.

The chelonian patient should be appropriately anesthetized prior to placement. Propofol at 12 mg/kg intravenously into the dorsal or ventral tail vein, or jugular vein, works well. Lizards can be anesthetized with propofol at 10 mg/kg intravenously into the tail vein. A curved hemostat is gently placed into the oral cavity and pressed into the lateral portion of the neck caudal to the mandible and hyoid apparatus. An incision is made over the tip of the hemostats. For chelonians the incision should be made caudally to minimize movement of the tube when the turtle retracts its head into its shell. Use caution to avoid the jugular vein, which is in close proximity. A red rubber urinary catheter of appropriate size is pre-measured (from the nose to middle of the carapace in chelonians and from the nose to mid-body in lizards to be the approximate distance to the stomach) and marked. The tube is grabbed by the tip of the hemostat and pulled into pharyngeal/esophageal lumen. The tube is then passed down into the stomach. A purse-string suture is placed to suture the skin around the tube. Additionally, the tube is sutured to the skin with a tape butterfly or a Chinese finger trap suture. The tube is then taped or bandaged to the neck, top of the head, or midline of the carapace in chelonians. It is important to protect the tube from the front legs in chelonians, as they are prone to using their limbs to remove the tubes.

Fluids, enterals, and drugs can be administered directly into the gastrointestinal tract through this tube. Between uses (as well as before and after each use) the
tube should be flushed with water to remove residual material and maintain patency. The tube should also be capped for protection. Syringe plungers work well to cap pharyngostomy tubes, but should be taped into place.

The tube may be kept in place until the patient is stable, eating on its own, and has completed an oral therapeutic regimen (weeks to months). Initially, antibiotics are recommended while the tube is in place (several weeks). Removal of the tube typically results in a rapid closure of the fistula without surgical closure.

**CARDIOPULMONARY RESUSCITATION (CPR)**

Reptiles that arrest due to chronic illness are unlikely to respond to CPR. However, reptiles that arrest under anaesthesia or acute respiratory distress may respond. An endotracheal tube should be placed (or maintained) and positive pressure ventilation can be given every fifteen seconds. It is best to use room air instead of oxygen if arrest is related to the anaesthetic. If the reptile is in cardiac arrest, begin rapid chest compressions and give epinephrine (0.5-1.0 ml/kg of 1:1,000 IT, IC, IO, IV) and atropine (0.5 mg/kg IT, IV, IO), and continue ventilation. The patient should then be closely monitored for a response, and drugs should be repeated if necessary. Unfortunately, the reptile’s heart may continue to beat, but the patient may never begin voluntary breathing.

**References**