

Approach to Reptile Emergency Medicine



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KEYWORDS

• Reptile • Physiology • Anatomy • Emergency room veterinarians

KEY POINTS

- A basic understanding of reptile physiology and anatomy is essential in assessing, diagnosing, and treating reptile patients even in emergency room situations.
- Since reptiles are ectotherms, their physiology and anatomy is driven and determined by core body temperature derived from the environment.
- The general body systems of reptiles are similar but different from higher vertebrates with important differences even between reptilian species of the same family.
- Understanding these unique differences is key in properly medically managing and treating reptiles in an emergency room clinic.

INTRODUCTION

Over the last 20 years, there has been a steady increase in reptiles kept as pets, increasing the chances of a reptilian patient eventually entering a veterinary emergency clinic.¹

A clinician should be familiar with basic reptile physiology and anatomy and understand the unique features of reptilian cardiovascular, respiratory, and metabolism predominantly affected by temperature in order to diagnose and determine what treatment is immediately necessary. Companion animal techniques and applications are commonly used in reptiles with the importance of temperature and a slower metabolism kept in mind. The class Reptilia is a diverse group made up of 4 orders: Crocodylia (crocodiles, gavials, caimans, and alligators), Rhynchocephalia (tuatara), Squamata (lizards, snakes, and worm lizards) and Chelonia/Testudines (turtles, terrapins, and tortoises), totaling more than 10,000 species in the world.² The wide diversity within this

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class with anatomic and physiologic adaptations to specific environmental niches produces a wide range of body conformations, behaviors, dietary requirements, and husbandry requirements that can be daunting, especially to clinicians who are not routinely exposed to these animals.

The purpose of this chapter is to provide a cursory overview of reptile anatomy and physiology for emergency room veterinary clinicians, while common reptile emergencies is covered later in this issue (See [Music and Strunk: Reptile Critical Care and Common Emergencies](#), in this issue). It is beyond the scope of this chapter to cover each body system in detail, as each system alone deserves a chapter. Complete reviews of anatomy,^{3–10} physiology,^{11–13} clinical medicine,^{1,10,14–23} and pathology^{10,24–27} have been published. *Reptile Medicine and Surgery, 2nd edition*,²⁸ covers in depth every aspect of reptile anatomy, physiology, pathology, and clinical medicine. The recent *2014 Current Therapy in Reptile Medicine and Surgery*²⁹ contains some of the most recent updates in reptile medicine. The author recommends having these sources on hand if clinicians expect to consistently care for reptile patients as well as up-to-date information through professional organizations such as the Association of Reptilian and Amphibian Veterinarians (ARAV), veterinary medical journals, continuing education (CE), scientific meetings, and online resources.

HISTORY AND PHYSICAL EXAMINATION

Before accepting reptile patients, certain safety parameters such as excluding venomous or dangerous species is strongly recommended. The wide diversity of reptiles can be daunting to the uninitiated when first seeing a reptile patient. Properly identifying the species using information provided by the owner and confirming species utilizing an Internet search can also quickly provide essential information on a patient's physiology, anatomy, behavior, husbandry, and nutritional requirements. De la Navarre² provides a set of history questionnaires to obtain a thorough history of the patient and husbandry care. Obtaining a complete history for a reptile patient should also include husbandry care and nutritional history. Improper husbandry care is frequently the cause of disease, which needs to be reviewed with the rest of the clinical findings to determine the medical diagnosis. Husbandry deficiency in environmental, nutritional, and/or sanitation requirements are the common causes for an underlying chronic pathological disease.

Having a basic understanding of typical behavior of the commonly kept reptile species can help determine the normal versus abnormal behaviors ([Table 1](#))³⁰, taking into account the effects of ambient temperature on a reptile's activity and responsiveness. As expected, cold reptiles clinically can be dull and lethargic with decreased (depressed) biological parameters. The physical examination of reptiles otherwise involves applying the same fundamental concepts of a physical examination of any domestic animal to reptiles with anatomical and physiological variations described below.³¹

PHYSIOLOGY

Thermoregulation

Reptiles are ectotherms deriving heat from the environment to maintain their body temperature with anatomic adaptations and behavioral adjustments to select the preferred optimal temperature range (POTR). The evolutionary advantage for

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