Oncology of Reptiles

Diseases, Diagnosis, and Treatment

Jane Christman, DVM[a], Michael Devau, DVM, DACVR (Radiation Oncology)[a], Heather Wilson-Robles, DVM, DACVIM (Oncology)[a], Sharman Hoppes, DVM, DABVP (Avian)[a], Raquel Rech, DVM, MS, PhD[b], Karen E. Russell, DVM, PhD, DACVP (ClinPath)[a], J. Jill Heatley, DVM, MS, DABVP (Avian, Reptilian & Amphibian), DACZM[a,*]

KEYWORDS

• Lizard • Chelonian • Snake • Cancer • Neoplasia • Chemotherapy • Radiation

KEY POINTS

- There is a lack of prospective research on treatment modalities for reptile species.
- Secondary treatment modalities and treatment of metastatic or systemic neoplasia that have been used in reptiles include chemotherapy (local and systemic), radiation, electrochemotherapy, laser therapy, cryotherapy, and photodynamic therapy.
- Husbandry considerations including proper nutrition and housing requirements specific to each species are important in the management of reptile patients affected by neoplasia.

INTRODUCTION

Reptiles are a diverse class of animals for which there are unique anatomic considerations as well as complex physiologic and pathophysiologic processes. However, they are prone to the diseases and disorders that are common to the animal kingdom, including neoplasia. Based on necropsy review, captive reptiles have an incidence of neoplasia comparable with that of mammals and birds.[1] Some reports have suggested an increasing incidence of neoplasia in reptiles.[2–4] However, neoplastic processes have even been noted with some frequency in ancient reptile ancestors, including several extinct dinosaur species.[5] Recently, advances in medical knowledge and diagnostic capabilities in veterinary medicine have improved antemortem diagnostics and neoplasia is now a more commonly diagnosed clinical problem affecting

Disclosure: The authors have nothing to disclose.

[a] Department of Small Animal Clinical Sciences, College of Veterinary Medicine and Biomedical Sciences, Texas A&M University, 408 Raymond Stotzer Parkway, College Station, TX 77843-4474, USA; [b] Department of Veterinary Pathobiology, College of Veterinary Medicine and Biomedical Sciences, Texas A&M University, 400 Raymond Stotzer Parkway, College Station, TX 77843-4467, USA

* Corresponding author.

E-mail address: jheatley@cvm.tamu.edu

Vet Clin Exot Anim 20 (2017) 87–110

http://dx.doi.org/10.1016/j.cvex.2016.07.003

vetexotic.theclinics.com

a wide variety of reptilian species.[2–4,6–10] Reptiles are becoming increasingly popular in the United States as pets,[11] and continue to be maintained in zoologic and research settings. Modern reptile owners are more likely to be interested in pursuing advanced diagnostics and treatments. Therefore, updating current information on diagnostic and treatment modalities for neoplastic processes is essential. However, the diagnosis of a malignant neoplasm in a reptilian patient continues to be challenging for exotic animal clinicians, because primary research in specific tumor types is lacking. For this reason, best practice often remains unknown.

Although reptiles differ considerably in their anatomy and physiology from other taxa, most cancer treatments are adapted from clinical and basic science research and clinical oncology practice in companion mammals. A lack of knowledge in reptile oncology regarding effective treatment protocols makes translational medicine combined with good clinical judgment a necessity to provide the best outcomes for reptiles with cancer. Therefore, veterinary clinicians seeing reptile patients must be generally familiar with diagnosis, treatment, and prognosis of various neoplastic processes in companion animal species. Consultation and collaboration with companion mammal veterinary oncologists is highly recommended for these cases.

This article provides exotic animal veterinary practitioners with a review of current literature, including case reports and primary research on neoplasia in reptiles, and gives an overview of the available diagnostic and treatment tools for use in reptiles with these conditions. It is hoped that this review will facilitate diagnosis of neoplasia in reptiles and challenge veterinary practitioners to document and report treatment of neoplasia in these species, independent of outcome, to advance the knowledge of, and improve standards of care for, these species (**Fig. 2**).

DISEASES

In the last 10 years, numerous case reports and several case series have described neoplasia across various reptile species. Most modern reports describe a specific tumor type occurring in a specific reptile species. Limited data exist describing a range of tumor types in a single species or a single tumor type across multiple species. Case reports of reptile neoplasia from the last 10 years, including tumor type, species group, location, and treatment performed, are listed in **Table 1**. This information, along with

Fig. 1. Multiple cutaneous papillomas in a chameleon (*Chamaeleo* sp). This lizard also has dysecdysis. (*Courtesy of* Michael Garner, DVM, DACVP, Northwest ZooPath.)