Mineralized Skin Lesions in Lizards

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Drury Reavill, DVM, DABVP (avian practice), DACVP, and Robert Schmidt DVM, PhD, DACVP

From Zoo/Exotic Pathology Service, 2825 KOVR Drive, West Sacramento, CA 95605

Abstract

Calcinosis cutis is an uncommon process characterized by inappropriate deposition of inorganic calcium and phosphate ions with smaller amounts of iron, magnesium, or other mineral salts, in the dermis, epidermis, or subcutis. It generally encompasses all forms of calcification, whether dystrophic or metastatic. In dogs, it most commonly describes a specific type of dystrophic calcification seen in association with hyperglucocorticoidism (Gross et al, 1992).

Calcinosis circumscripta is a clinical subgroup of calcinosis cutis that is characterized by the deposition of calcium salts in tumor-like nodules, usually in the subcutaneous tissues. The mechanism in mammals has been classified as idiopathic; however it is probably dystrophic. Calcinosis circumscripta is most frequently recognized in dogs and horses and these animals generally have normal serum concentrations of calcium and phosphorous (Gross et al, 1992) (Kirby et al, 1989).

There are two general mechanisms of tissue mineralization. Dystrophic calcification occurs in nonviable or dying tissues. It can also occur in tissue migration tracts and foci of metazoan parasites. Dystrophic is not associated with hypercalcemia or other disturbances of calcium homeostasis. It occurs in cells injured in a variety of ways, including vascular, toxic, metabolic, or inflammatory diseases (Cooper 2002).

Metastatic calcification results in the deposition of calcium in vital tissues and reflects some disturbance in calcium metabolism. In mammals, common causes include hyperparathyroidism, certain neoplastic diseases, vitamin D related disorders, and renal failure (renal secondary hyperparathyroidism). In renal disease, it is difficult to differentiate dystrophic (degenerative lesions of uremia) from metastatic calcification (secondary hyperparathyroidism) (Cooper 2002).

These lesions are rarely described in non-mammals. One African grey parrot, *Psittacus erithacus timneh*, with a recurrent deep foreign body granuloma in the body of its tongue had an associated area of calcinosis circumscripta (granulomatous inflammation and dystrophic mineralization of submucosa) (Anderson 1997). A case of calcinosis cutis in a lizard was associated with use of a poorly calibrated (hot rock) cage heating unit (Frye 1991). These mineralized deposits must be differentiated from the normal endolymphatic sacs (also known as calcium storage organs or chalk sacs) of some lizard species. Endolymphatic sacs are generally bilateral deposits of calcium found in the subcutis of the ventral cranial cervical region that serve as reservoirs for

calcium ions. They have been described primarily in Gekkonid and Podarcis lizards (Marmo et al, 1981)(Mylniczenko et al, 2001).

Over the past four years, eight cases of lizards with a diagnosis of calcinosis cutis (six lizards) and calcinosis circumscripta (two cases) were identified. Four lizards are old World chameleons (crested chameleon, *Chamaeleo cristatus* , panther chameleon, *C. pardalis* , veiled chameleon, *C. calyptratus* , and a chameleon, species not provided). The remaining lizards are two *Uromastyx*, species unknown, a bluetongue skink, *Tiliqua sp*. , and a Komodo dragon, *Varanus komodoensis* .The lesions were local swellings to multifocal crusty skin thickenings, ulcerations, sloughing scales and occasionally petechial hemorrhages over the body, feet, legs and tail. The discrete masses were filled with a white liquid crystalline material. The four cases with blood work or necropsy results had significant renal disease. Stains for calcium salts were positive on all cases and urate stains were equivocal on three cases. Urate granulomas closely associated with the mineralized lesions were recognized on H&E sections in two cases. These findings suggest renal disease is an important underlying disease.

Key words
Lizards, Calcinosis cutis, calcinosis circumscripta, renal disease, skin lesions, crested chameleon, *Chamaeleo cristatus*, panther chameleon, *C. pardalis*, veiled chameleon, *C. calyptratus*, *Uromastyx*, bluetongue skink, *Tiliqua sp*., Komodo dragon, *Varanus komodoensis*

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