A CASE OF CALCINOSIS CUTIS AND PSEUDOCUTANEOUS HORN IN A CAPTIVE RED-EARED SLIDER
(Trachemys scripta elegans)

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Resumen: Se describe un caso de calcinosis cutis acompañada de una proliferación corneana con protusión hacia el exterior, formando un pseudocuerno cutáneo, en el cuello de una tortuga de Florida (Trachemys scripta elegans). Esta patología dermatológica adquirida, descrita aquí por primera vez en una tortuga, consiste en una excrescencia epidérmica formada básicamente de queratina y estructurada sobre un núcleo compacto y osificado en una disposición intradérmica. Se sugiere que esta lesión se desarrolla como consecuencia de una reacción proliferativa cutánea ante la presencia de una calcinosis cutis, lesión asociada a una calcificación ectópica en reptiles aparentemente sanos. Debido a que estas lesiones son asintomáticas y se presentan en reptiles sanos, se aconseja la realización de un detallado examen externo, la realización de biopsias, la remisión a servicios de histología de las estructuras sospechosas y la inclusión de esta lesión en todos los diagnósticos diferenciales dermatológicos.

Key words: calcinosis cutis, pseudocutaneous horn, Trachemys scripta elegans, Chelonia, dermatology.

INTRODUCTION

Calcination cutis and (true) cutaneous horns are dermatologic processes described in numerous vertebrate species. However, these lesions are only rarely reported in reptiles (Frye, 1991; Frye & Williams, 1996). The likely reasons for the apparent rarity of these cutaneous excrescences include minimal clinical signs, relative small size of the lesions, an absence of owners' interest to evaluate them – or a reluctance to spend money to have them examined professionally; each of these are probably reflected by the paucity of documented cases. This report describes a case of calcinosis cutis and pseudocutaneous horn in a turtle (Trachemys scripta elegans), the procedure for its excisional biopsy, and the histologic description of the lesion. This is the first description of the histological characteristics of a pseudocutaneous horn in a reptile, and the gross appearance of the lesion is similar to true cutaneous horns in

Figure 1. Preoperative photograph of pseudocutaneous horn arising from the ventral cervical integument of a red-eared slider turtle.
other animals and humans described (Lever 
& Lever, 1983). The histological 
characteristic, however, differ because of the 
presence of dense intradermal bone, bone 
marrow, and the lack of hyperkeratosis in the 
horny mantle that invests the exposed portion 
of the bony excrescence.

**CASE REPORT**

In August 2000, a 4 year-old female red-
eared slider (Trachemys scripta elegans) was 
donated to the Catalan Reptile and 
Amphibian Rehabilitation Center (C.R.A.R.C.) 
because the owner lacked a proper terrarium 
in which to house it. Upon examination, the 
turtle did not display clinical signs of disease. 
A review of the husbandry conditions were 
considered to be satisfactory for this species. 
A detailed external examination disclosed a 
cornified structure arising from the ventral 
cervical skin. Palpation revealed the 
anomalous structure to be penetrating to the 
depth of the subcutaneous and dermal tissues 
(Figure 1).

The turtle was anesthetized with tiletamine 
-zolazepam (Zoletil 20®, Virbac, Barcelona, 
España) at a dosage of 15 mg/kg IV, injected 
into the dorsal coccygeal vein. This induced 
a state of deep anesthesia that was achieved 
in 10 minutes. The surgical procedure was 
completed in 35 minutes. The turtle awoke 
after 50 minutes after conclusion of the 
surgery. An excisional biopsy was performed 
employing a longitudinal skin incision that 
surrounded the cornified structure. Blunt 
dissection to a depth of 0.5 cm was employed 
to completely excise the subcutaneous tissue 
surrounding a cartilaginous attachment to the 
horn-like structure. The lesion was a 
circumscribed, conical object that protruded 
from the surrounding integument and 
measured 2.0 x 9.5 mm. The skin was sutured 
in a slightly evertting pattern with polyglycolic 
acid material (Vycril®, Ethicon, Edinburgh, 
Scotland, Reino Unido).

Post-surgical treatment comprised daily 
disinfection of the incisional line with dilute 
iodine solution and intramuscular injections 
of enrofloxacin (Baytril® 2.5%, Bayer, Barcelona, 
España) at 5 mg/kg q 24h for 10 days. The 
sutures were removed one month 
postoperatively. Four months after excisional 
bipso, the turtle remains normal and exhibits 
no evidence of regrowth of the cutaneous horn. 
The excisional biopsy specimen was fixed in 
10% neutral buffered formalin, processed by 
routine histological methods, and stained with 
hematoxylin and eosin.

**HISTOLOGICAL EXAMINATION**

The lesion consisted of a raised mass 
composed of a compact bony cortex core with 
scanty bone marrow filling the cancellous spaces 
(Figure 2). This bony core was covered on its 
outside surface by a mantle of cornified 
quamous epithelium that varied in thickness 
from only a few cell layers at its base to a 
substantially thicker and smooth horny layer at 
its outermost apex. A few scattered dendritic 
melanin-containing chromatophores were 
identified within the superficial layers of the 
dermis immediately beneath the outermost apex.

**DISCUSSION**

Calcinosis cutis is a pathological process 
characterized by the deposition of calcium-
rich mineralized plaques within the dermis and 
can be related to acute or chronic trauma or
nutritional disorders (Frye, 1991). True cutaneous horns are relatively common integumentary lesions in humans and have also been described in domestic animals, especially canines. The second author has diagnosed true cutaneous horns in two dogs, one cat and two tortoises Terrapene carolina and Gopherus agassizii (the last published in Frye, 1991). We are aware of two additional: one in a monitor lizard, Varanus exanthematicus (Barten, unpublished data) and a wild green iguana, Iguana iguana, (Frye, unpublished data). Although true primary cutaneous horns are benign lesions, they have a potential for malignant transformation into keratoacanthoma and squamous cell carcinoma (Bart et al., 1968), basal cell carcinoma (Sandbank, 1971), and more rarely, tricholemmoma (Brownstein & Shapiro, 1979; Lever & Lever, 1983). The etiology of true cutaneous horns in reptiles is unclear, but in humans, chronic overexposure to solar irradiation, chronic abrasion, and/or other chronic trauma have been associated with the induction of these hyperkeratotic epidermal excrecenses (Robbins & Cotran, 1979). In this instance, the development of a pseudocutaneous horn is unknown but we suspect that it was secondary, and in reaction to, the presence of a discrete focus of chronic calcinosis cutis comprising a core of dense compact and cancellous bone containing bone marrow. The precise differentiation between pseudocutaneous horns and true cutaneous horns depends upon the characterization of histological features of both, especially the presence or absence of significant hyperkeratosis which is a hallmark of true cutaneous horns and is lacking in pseudocutaneous horns.

Acknowledgments: The authors are grateful to J. Francisco-Suarez, I. Caballero, A. Pitrola and J. Soler-Massana for their aid in the biopsy procedure and postsurgical care, to Laboratori Cito-Histologic (Barcelona) for their preparation of histological sections, and to Richard McClintock, M.D., and Jason Trent, M.D., for their review of the histopathology in this case.

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