

# Kidney Damage Chronic in Hormiguero Bear: Tamandu á (Tamandua Mexicana)

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## Abstract

The anteater (Tamandua spp.) is a species with low population density, it does not know several aspects of its natural history, its habitat presents high rates of deforestation and fragmentation and its state of endangered species, are characteristics that make the anteater. The main threat to the species is the loss of habitat, thousands of hectares of tropical forest are destroyed or fragmented annually due to agricultural activities and cattle. The present study describes the finding of chronic kidney damage in an adult female captured in the Tamaulipas highlands in the Gulf of Mexico, during which, during clinical evaluation and clinical feeding, it was expressed as a sign of weakness, progressive thinning, infection moderate cutaneous. In addition to dyspnea and diarrhea, necropsy and histopathology were performed in which a severe uremic syndrome process was identified with renal insufficiency, membranoproliferative glomerulonephritis and a severe systemic process due to chronic renal damage, lack of diet or inadequate diet. Has led to the expression of degenerative processes of chronic diseases that imply the survival of the species, together with the high affectation of its habitat. This, among other reasons, draws attention to the importance of conducting research that provides useful information about these agencies, both in the state and in the rest of the country.

**Keywords:** Kidney; Tamandua bear; México

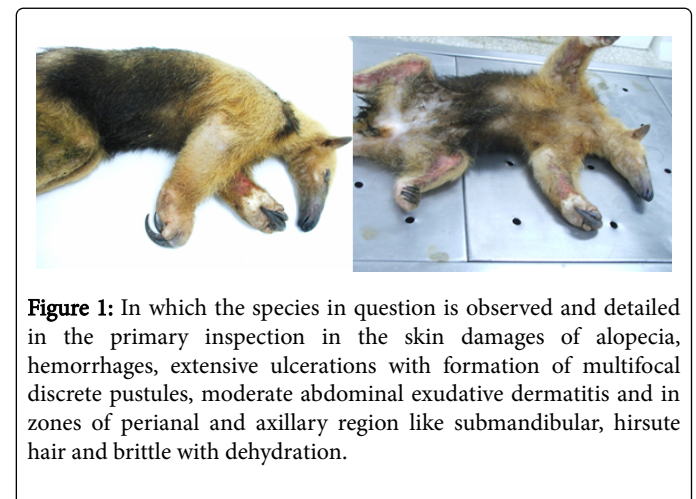
## Introduction

The anthill bear also known as a strong arm (Figure 1), is physically characterized by having an elongated snout, a naked and prehensile tail, cream-colored fur with a dark vest and lack of teeth. It is a medium mammal of between 3.8 and 8.5 kg. These mammals belong to the order of Xenarthros, within which are also armadillos (e.g., in Mexico *Dasyus novemcinctus* and *Cabassous centralis*) and the little-known Pigmy anteater or silky anteater (*Cyclopes didactylus*). The name Xenarthra refers to extra joints in the lumbar vertebrae, which are an exclusive feature of these animals and serve as lumbar reinforcement when digging primarily to obtain their food.

Mammal of medium size like that of a fox; Has an elongated head and muzzle; It lacks teeth; It has a long thin tongue; Short round ears; Thick and strong neck; His body is robust; Its legs are short, strong and thick, has a very large nail (25 to 50 mm long) on the front legs, the other fingers have reduced nails, as on the hind legs; Its tail is prehensile and long, which lacks hair in the distal part. The coloration of the head, legs and tail can range from cream to golden brown and the body is black. The juveniles are of uniform color pale yellow, acquiring the adult coloration after 3 years. The coat is dense, rough and shiny. Body measurements (in mm) for both sexes are: body length, 520-770; Tail length, 400-675. Body weight is 3.8 to 8.5 kg [1].

Is distributed mainly in the tropical lowlands from Tamaulipas and San Luis Potosí on the Gulf slope, and Michoacán on the Pacific slope

to the Isthmus of Tehuantepec, Chiapas (except in the temperate highlands) and the Yucatan Peninsula.



**Figure 1:** In which the species in question is observed and detailed in the primary inspection in the skin damages of alopecia, hemorrhages, extensive ulcerations with formation of multifocal discrete pustules, moderate abdominal exudative dermatitis and in zones of perianal and axillary region like submandibular, hirsute hair and brittle with dehydration.

The anteater, as the name implies, feeds mainly on ants and termites. The proportion of consumption of both varies between individuals and seasonally [2]. Individuals with tree habits tend to consume ants, and those who spend more time at ground level consume termites. Much of their time is spent searching for their food and they can visit in a day between 50 and 80 colonies of ants or termites, however, by colony does not remain more than a couple of minutes [2]. Among the main genera of ants that are fed are: Azteca,

Camponotus, Dolichoderus, Solenopsis, and termites: Armitermes, Calcaritermes, Leucotermes and Nasutitermes [2].

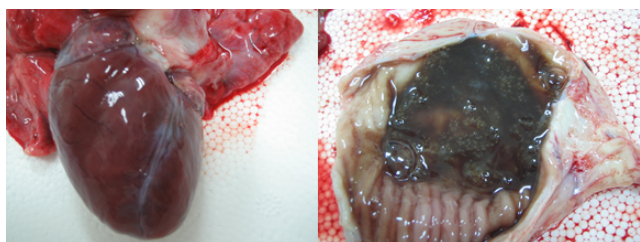
In addition to the lack of knowledge of these unique animals, their populations are under different threats: as the destruction of their habitat and the exploitation to which the species is subject. This is perceived in comments with populations and villagers reveal that anteaters are sold as pets or hunted for the false belief that they extract the brains of dogs and even people, in addition they are somewhat miraculous or are useful for luck. If this is added personal observations of multiple road crashes, which their populations are in decline [1,3].

### Case History and Clinical Findings

Thus, the objective of this report was to document a case of chronic renal damage and chronic multisystemic process in an anthill bear also known as a strong arm in Mexico. In January of 2015, a dead adult female anteater anteater that was housed in captivity was referred to the Laboratory of Pathology of the Veterinary Medicine College of the Autonomous University of Tamaulipas, Mexico. The anamnesis of the animal revealed clinical antecedents related to weakness, anorexia and progressive wasting, removal of body fat, proteinuria, uremia and renal failure. These clinical signs lasted two weeks before the animal died.



**Figure 2:** The areas of dermal lesion accompanied by extensive ulceration and fecal adhesions due to diarrhea in the perianal region are observed, pulmonary edema with diffuse focal hemorrhages is observed in the macroscopic secondary inspection in the cavity.



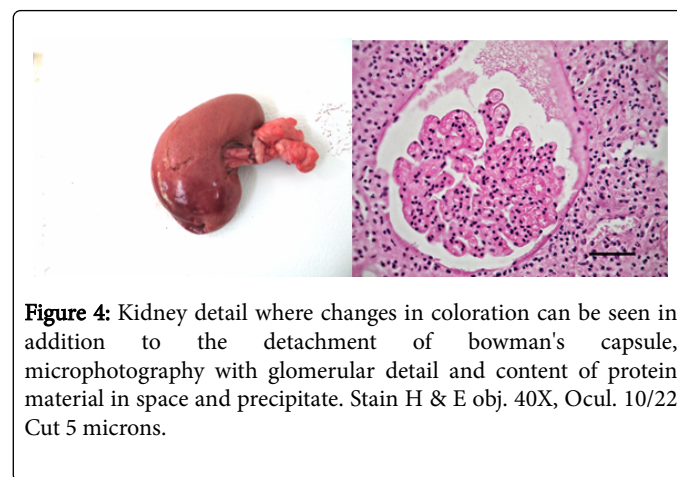
**Figure 3:** Degenerative change with removal of diffuse epicardial fat, presence of hemorrhages and moderate ulcers in the gastric mucosa.

The dead tamandua presented a poor body condition, severe dehydration, pale membranes (anemia), exudative secretion and hemorrhagic ulcerations in oral mucosa and skin regions (Figures 1-3). Posterior and anterior limbs presented cutaneous ulcerations and extensive regions of alopecia with formation of small white multifocal

pustules, with vascularization associated with this, diarrhea and severe dehydration were observed.

### Pathological Findings

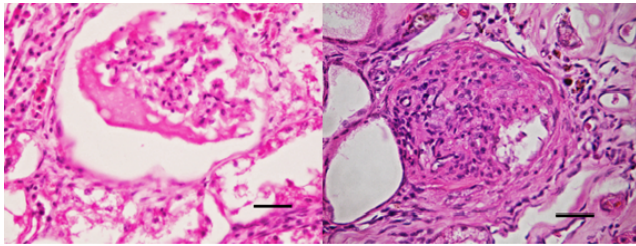
At necropsy, the main lesions identified were in the urinary system, which included nephromegaly with severe color changes (brown), focal capsular adhesions and change in the consistency of both kidneys (Figure 4). There were also sediments in the renal pelvis and bladder. Histopathological examination of the kidney revealed membrano proliferative glomerulonephritis with eosinophilic material in the interstitial, increased mesangial cell numbers, presence of severe protein deposition in the glomerular capsule, proliferation of fibrous tissue in the glomeruli and severe degenerative changes, necrosis and epithelium.



**Figure 4:** Kidney detail where changes in coloration can be seen in addition to the detachment of bowman's capsule, microphotography with glomerular detail and content of protein material in space and precipitate. Stain H & E obj. 40X, Ocul. 10/22 Cut 5 microns.

Desquamation of the renal tubules. Amyloid was identified in the glomeruli and renal tubules by hematoxylin eosin and the connective and vascular tissues were differentiated with the van Gieson stain. Other identified lesions consisted of bronchiectasis, antracosis, pulmonary fibrosis, suppurative bronchopneumonia and deposition of amyloid in the lungs, (Figure 5), Removal of body fat and cardiac region, hepatomegaly and splenomegaly with color changes, focal pancreatic necrosis, severe multifocal ulcers and moderate diffuse hemorrhages in the gastric mucosa. Once the macroscopic and microscopic lesions were analyzed, it was revealed that the morphological diagnosis of Tamandua was consistent with a multisystem disease characterized mainly by severe pulmonary edema with severe multifocal bronchiectasis, moderate lipids hepatomegaly and renal amyloidosis with membrano proliferative glomerulonephritis.

Histopathological analysis revealed diffuse severe pulmonary edema with accumulation of eosinophilic interstitial protein material, pleural thickening, and multifocal petechial hemorrhages, with moderate epithelial hyperplasia in the stomach accompanied by multifocal inflammatory cell infiltration in mucosa and lamina propriety, multifocal ulcerations and severe hemorrhages (Figure 5). In the kidney, it was observed accumulation of protein material in glomerular space, increased glomerular number with increased mesangial cellularity, formation of thin and adherent membranes, degenerative changes and glomerular morphostasis with atrophy necrosis.



**Figure 5:** Histological sections of the kidney in which the accumulation of protein content is clearly detailed, glomerular distention, and severe formation of thin membranes in the glomerular ball space. Stain H & E obj. 40X, Ocul. 10/22 Cut 5 microns.

One of the main problems in the preservation of species besides the control of protected areas and natural reserves in terms of poaching and furtive commercialization of wildlife species is the control of both parasitic diseases [4,5] and the systemic ones [6], although a great effort has been reported to preserve *Tamandua* spp. in the southern part of the country, however, maintenance, feeding and control of the (*Tamandua mexicana*) recorded in the necropsy log of the Miguel Álvarez del Toro Zoology Department, Tuxtla Gutiérrez, Chiapas, during the period 2004-2010. It was determined that the most frequent cause of death was starvation, caused by different diseases, and pneumonia as the second cause of death. Apparently, the variables of month of the year and sex of the sample do not show an influence on the causes of registered deaths [4,5]. In the present work it is detailed according to the pathological alterations found that determine the systemic picture associated with renal processes, they imply a great deal of their nutritional and alimentary state, which is of great importance to take into account since these species are very special in their diet, if the Risk factors to predispose diseases such as displacement of areas where they live, lack of food and poaching, are elements that lead to high magnitude the presence of pathological processes that could end the population diversity of this species in the short or medium term [7-11].

## Conclusion

This study describes the finding of chronic kidney damage in an adult female captured in the Tamaulipas highlands in the Gulf of Mexico, during clinical evaluation and clinical feeding, it was expressed as a sign of weakness, progressive thinning, infection Moderate cutaneous has been explained.

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