
**CASE REPORT: RESPIRATORY DISEASE IN RED-FOOTED TORTOISE
(*Chelonoidis carbonaria*) WITH TOMOGRAPHIC LESIONS COMPATIBLE WITH
PULMONARY FIBROSIS**

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SUMMARY

Respiratory affections are among the most common diseases in chelonians kept in captivity. The use of adequate diagnostic tools for these conditions proves to be a powerful tool for the treatment of these clinical conditions. Here we report a 20-year-old male tortoise who presented at the consultation with anorexia, apathy and limb paresis, bilateral ocular discharge and dyspnea. Clinical suspicion was based on the picture of respiratory disease (pneumonia). Antibiotic therapy with Gentamicin, Vitamin A, fluid therapy with Vitamin B12 was performed, and radiography of the coelomic cavity and laboratory tests (CBC, renal and liver profile) were requested. Laboratory tests showed anemia and eosinophilia. The radiography showed opacification in lung fields suggesting an inflammatory/infectious process. After a period of treatment, the patient presented a clinical development of the case, and a new radiography was performed demonstrating a favorable development, but still with opacification of the lung fields. It was decided to start a new antibiotic therapy with amikacin. After 3 weeks of the second antibiotic therapy, the patient presented anorexia, inappetence, and achesia. Where a CT scan was requested for suspected TGI Hypomotility. Tomographic images showed changes in organs of the coelomic cavity and changes in the left lung lobe compatible with pulmonary fibrosis. We present here a report of the first suspicion of pulmonary fibrosis in red-footed tortoise with clinical therapeutic protocol data for the condition.

Key words: Chelonians; Pneumonia; Radiology; Reptiles; Testudines.

INTRODUCTION

Among the reptiles raised as pets, terrestrial turtles (tortoises) represent the main species kept in captivity in Brazil, mainly due to their great longevity. However, due to the lack of information and knowledge of the owners, about the biology and correct management, this misinformation ends up leading to several diseases that tend to decrease the life expectancy of these animals in captivity (RIVA et al., 2014).

The Red-footed tortoise (*Chelonoidis carbonaria*) is a species of terrestrial chelonian found in tropical areas of South America: in the Guyanas, Venezuela, Ecuador, Paraguay, Brazil and some Caribbean islands (CONCEIÇÃO et al., 2009). Despite not being listed in the endangered species, this species suffers considerable anthropic impact due to habitat degradation, invasive species, pollution, urban growth and mainly the trafficking of wild animals that led *C. carbonaria* to become the most popular chelonian species. bred in captivity in Brazil as a pet, leading this animal to represent a significant percentage of the sample of Wild Animal Medicine consultations (POLANCO et al., 2020).

The highest rates of morbidity and mortality found in reptiles are caused by infectious diseases. Many of these diseases can be successfully treated. If recognized early enough, they are almost always secondary to a state of immunosuppression, and are often associated with captivity stress and biological mismanagement of the animal (SILVEIRA et al., 2014). Although chelonians are recognized for their long lifespan, they are susceptible to a wide variety of health issues in captivity. Respiratory diseases are commonly found in captive turtles, both in aquatic and terrestrial species (ORIGGI; JACOBSON, 2000). As they represent a considerable number of cases in chelonians, respiratory diseases can represent an important and significant morbidity and mortality in these animals. Respiratory disease in reptiles is believed to have a multifactorial cause, being related to suboptimal rearing conditions, such as inadequate ambient temperature, humidity or poor nutrition, resulting in immunosuppression that can lead to the respiratory tract of these animals being affected by infectious agents such as bacteria, fungi, parasites and viruses. Trauma or nutritional diseases can also lead chelonians to respiratory disease (STUDER; DI GIROLAMO, 2021). The aim of this study is to report a picture of respiratory disease in a red-footed tortoise with tomographic lesions compatible with pulmonary fibrosis.

METHODOLOGY

In July of 2021, veterinarians from Fábio Veterinary Consultancy performed a service to a male red-footed tortoise (*Chelonoidis carbonaria*), approximately 20 years old, weighing 3,400 kg, the person responsible for the animal reported that he had had the animal for 1 year, he informed he had rescued the animal, after it was abandoned for weeks in a vacant lot in the country side of São Paulo (Campinas-SP). Since the time when the animal was rescued, he took the animal to the vet and it was presenting cachexia and pneumonia, being treated for the clinical condition the animal presented and it had been clinically well since then. However, it had been 2 weeks since the person responsible noticed a change in the animal's behavior.

In the anamnesis, the person in charge reported that the animal had recently presented prostration, decreased locomotor activity, polyuria, inspiratory dyspnea with behavior compatible with aerophagia and hyporexia. According to the person, the animal fed on dark vegetables, fruits and commercial dog food. In the clinical examination, the animal presented a moderate degree of dehydration, bilateral ocular secretion, nasal secretion and respiratory stridor.

The clinical suspicion was based on the suspicion of respiratory disease (Pneumonia) and Hypovitaminosis A. Hemogram and radiography of the coelomic cavity were then requested: dorso-ventral, latero-lateral and cranio-caudal projections. CBC values indicated normochromic macrocytic anemia and lymphopenia. The radiographic images showed opacification in the lung fields, evidenced in a craniocaudal projection, suggesting an inflammatory/infectious process. Ventral portion of the coelomic cavity occupying more than half of the cavity (Organomegaly), compressing lung fields dorsally (Image 1).

RESULTS AND DISCUSSIONS

The changes found in the exams reinforced the clinical suspicion of an infectious respiratory disease. A therapeutic protocol was then instituted with 10 applications of Gentamicin 6 mg/Kg/IM every 72 hours, Vitamin A 2000 IU/KG/IM (CARPENTER, 2018), subcutaneous fluid therapy with Ringer Lactate and Complex B together with applications of Gentamicin.

After this period, the patient had a favorable clinical development, presenting mild dyspnea and normophagia, a new radiography was then requested, demonstrating mild opacification in the right lung fields, evidenced in a craniocaudal projection. (Image 1).

A new antibiotic therapy was initiated using Amikacin 5 mg/kg/IM every 48 – 72 hours for 7 applications (CARPENTER, 2018). Along with subcutaneous fluid therapy with Ringer Lactate twice a week. After treatment, the patient showed clinical improvement, presenting normophagia, normodipsia, but after 3 weeks of the end of treatment, the person responsible reported that the animal had anorexia, inappetence, achesia for a month, exercise intolerance and mild dyspnea. These reports raised the suspicion of GI hypomotility, a Coelomic Cavity Tomography (CT) was requested, Metoclopramide 1 mg/Kg/IM/SID was administered and hydration baths were performed with warm water.

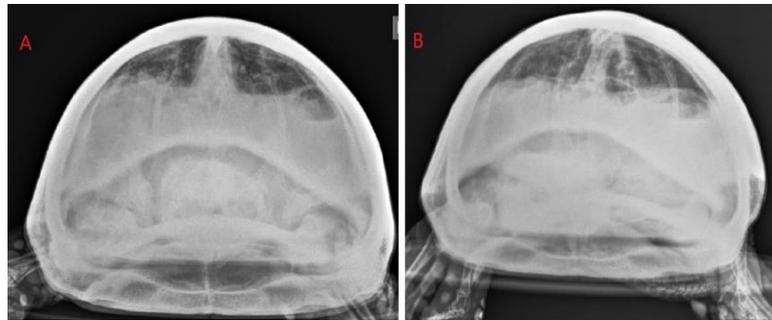


Image 1: Radiography Cranio-Caudal Projection *Chelonoidis carbonaria*. Clinical improvement is shown in the lung fields shown in Figure B after treatment compared to the first radiograph in Figure A

Tomography showed images of the liver with increased dimensions, homogeneous parenchyma and slightly decreased density, indicating mild hepatic steatosis. Small bowel loops with no content, no signs of intestinal obstructive process. Lung fields dorsally pushed back by the increase in the visceral portion. And caudal portion of the left lung lobe with a slightly emphysematous appearance associated with thickening of the pulmonary septum, consistent with an area of fibrosis secondary to previous lung disease (Image 2).

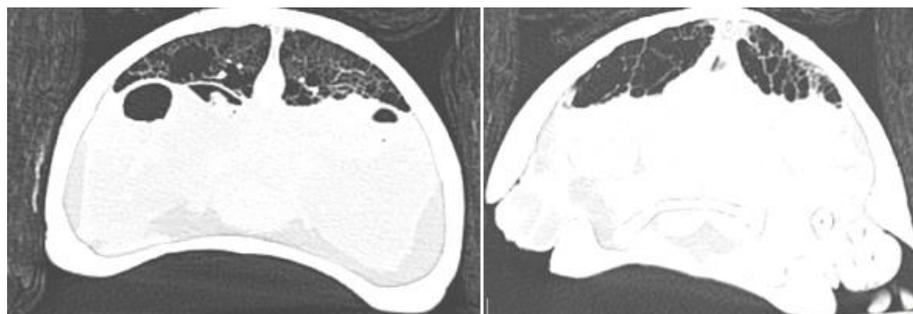


Image 2: Tomographic image demonstrating changes of suspicion of pulmonary fibrosis.

Due to the suspicion of pulmonary fibrosis being something not reported in the chelonian medical clinic, a search in the bibliography was carried out and only a single case in terrestrial chelonians was found (LIM et al., 2013), a Leopard Tortoise (*Stigmochelys pardalis*) that the tomography showed emphysematous lung parenchyma and thickened lung septa, bordered by irregular ground-glass opacity, but the animal in the report was euthanized and there were no other reports in the literature regarding pulmonary fibrosis in chelonians, nor information about therapeutic protocols. Based on the authors' clinical experience and on the therapeutic protocols that constitute corticosteroids as the therapy for idiopathic pulmonary fibrosis, a therapeutic protocol was instituted with Lactulone 0.5ml/KG/PO -7 days for the presented hepatic steatosis, Aminophylline 2 Mg/KG/IM every 48 hours 5 applications, Dexamethasone 0.2 Mg/Kg/IM (CARPENTER, 2018) every 48 hours for 7 applications and tube feeding. After 15 days of the end of the therapeutic protocol, the patient slowly started to present normorexia, normodipsia and normochezia. To this date, he continues to be monitored by the veterinary team and is in good clinical condition.

Pulmonary fibrosis is a chronic and progressive interstitial lung disease, in veterinary medicine, the diagnosis of pulmonary fibrosis is made based on clinical findings, imaging diagnosis and exclusion of other cardiorespiratory diseases. However, the definitive diagnosis requires histopathological examination (LIM et al., 2013). Due to the fact that the animal's guardian does not authorize procedures that would histopathologically confirm the pulmonary fibrosis condition, here we only raise insights regarding a clinical protocol used in indicative tomography images.

FINAL CONSIDERATIONS

The presented report is demonstrated in the bibliography as the first report of pulmonary fibrosis in a tortoise with notes on therapeutic protocols, the clinical suspicion of this condition was only possible thanks to the use of Tomography. This exam is presented in human and veterinary medicine as the gold standard imaging exam for the verification of pulmonary fibrosis, as certain alterations are not found on radiographies, despite the difficulty of access of many veterinarians to Tomography. This technique should begin to be used more in reptile medicine to detect diseases.

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