
PARASITOLOGY IN TERRESTRIAL TESTUDINES: PARASITOLOGICAL EVALUATION OF A JUVENILE AFRICAN SPURRED TORTOISE – CASE REPORT

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SUMMARY

Reptiles are animals kept under human care for a long time, terrestrial chelonians being a part of that, with an emphasis on the species *Centrochelys sulcata* commonly known as African Spurred Tortoise. This species is the third largest terrestrial chelonian in the world. Great advances have occurred in the care and management/handling of reptiles, but there is a demand for more information, research and reports involving parasites in reptiles and their diagnostic methods. The correct management, nutritional and parasitological control of animals in captivity is necessary due to the great risk of disease transmission, mainly zoonoses. In many cases of reptiles, the parasitic infection is asymptomatic, however, in poor hygiene conditions, parasitic diseases lead to anorexia, weight loss, decreased appetite and stress, in addition to developing other pathologies such as onychogryphosis and pyramiding. Knowing the species of parasites that can occur in the handled species of reptiles is extremely important for the clinical management of the reptile species. Here we present the main species of parasites found in the parasitological evaluation of a juvenile African Spurred Tortoise through different parasitology techniques and their clinical correlations with the species. Thus, we emphasize that periodic examinations for the detection of parasitism in chelonians raised in different environments is important for prophylaxis and reliable diagnoses.

Key-words: Parasitism; Parasitology; Reptiles; Chelonians; Testudines; Tortoises; Veterinary

INTRODUCTION

Parasitism is an interaction between vertebrates and invertebrates, in which there is an advantage for a species, the parasite, and a disadvantage for the host species. This interaction is divided into endoparasitism or ectoparasitism. (NEVES, 2005).

Chelonians differ from other reptiles by having a rigid shell that protects them from predators, climatic variations, and environmental pressures (GOULART, 2004). In their natural environment, in the face of adversity, these animals show fight or flight behavior. When they are in captivity, by preventing escape they are induced to a condition of deep frustration, which can lead to exhaustion and stress, and those can lead to diseases. As preventive measures, adequate management and diets are essential to reduce stress and the possibility of disease (FLOSI et al., 2001).

Parasitic diseases are among the main causes of gastrointestinal manifestations in reptiles. Understanding that parasites are a serious problem in reptiles kept in captivity is of extreme clinical importance, nonetheless, it is necessary to recognize that the manifestation of parasitic disease is related to the stress of captivity and the conditions in which the animals are kept (CARVALHO, 2018). Young animals in captivity are more prone to disease and consistently have high mortality rates. In captivity, depending on the conditions of the breeding environment and hygiene, chelonians are more prone to infectious and parasitic diseases (SILVA, 2009). Though, research shows that reptiles that are apparently clinically healthy may have high levels of parasitism (PEREIRA et al., 2018).

The African Spurred Tortoises, also known as Sulcata (Sulcata tortoise) (*Centrochelys sulcata*) are originally from sub-Saharan Africa, but are bred as pets in various regions (KUBIAK, 2021). Listed as vulnerable by the IUCN, natural populations of this species have declined due to desertification, overgrazing, habitat fragmentation, and trafficking for the pet trade (RADOVANOVIC, 2019). The goal of this study was to report the parasite assessment and the main species of parasites found in an African spurred tortoise juvenile.

METHODOLOGY

An African Spurred Turtle (*Centrochelys sulcata*) of undefined gender, approximately 1 year old, weighing 140 grams, was attended to by a Veterinarian from Fábio Veterinary Consultancy. In anamnesis, the guardian reported that the animal had no clinical manifestations, but the guardian believed that the animal had a growth retardation for its age. Upon clinical examination, no clinical changes were found. Three stool samples were then collected on alternated days to assess the presence of light eggs, heavy eggs and larvae. Parasitological examinations were performed using the Simple Sedimentation Techniques, Sheather, and Direct Research.

The simple sedimentation technique is mainly used to search for heavy eggs of Trematoda and Cestoda and consisted of diluting feces in physiological solution or water in a Becker until homogenizing the solution, and straining the solution into the sedimentation cup. After 15 minutes, the supernatant was discarded and more distilled water was added, left for another 15 minutes and drops of the sediment were collected with a pipette for microscopic evaluation.

The Sheather Technique, also known as the Floating Technique in Saturated Sugar Solution, consists of floating eggs, cysts or oocysts of parasites through the saturation of the solution causing flotation to occur. In the direct examination, the dilution and analysis are carried out in the aforementioned objectives. The techniques used in this report followed the methodologies described by MONTEIRO, 2017.

RESULTS AND DISCUSSIONS

The results of the processed samples showed a diversity of parasite species in each processed sample (Image 1), however all samples evaluated contained a low parasite load. The first sample was positive for Nematode eggs of *Oxyurideos sp*, presence of protozoa: cysts of *Nyctotherus sp*; coccidian oocysts and *Giardia sp*. The second sample was negative for nematodes and positive for protozoa, showing *Cryptosporidium* oocysts and *Giardia sp*. The third sample was positive for nematodes; showing the presence of *Oxyurideos sp*. eggs and positive for protozoa with the presence of *Nyctotherus sp*. cysts.

The *Oxyurideos sp* are nematode parasites commonly found in feces samples of terrestrial chelonians. They are generally non-pathogenic in most captive tortoises and treatment depends on the amount of parasites found and the physical condition of the tortoise (STAUFFER., 2003). Despite the low pathogenicity, a small percentage of cases with high parasite load led animals

to anorexia and post-hibernation death (KUBIAK., 2021). In the evaluation of the presented case, only one sample was positive for this parasite, which indicates its common presence and the low pathogenicity reported. Other nematodes such as roundworms have already been found in samples of African Spurred Tortoises (HALLINGER et al., 2018).

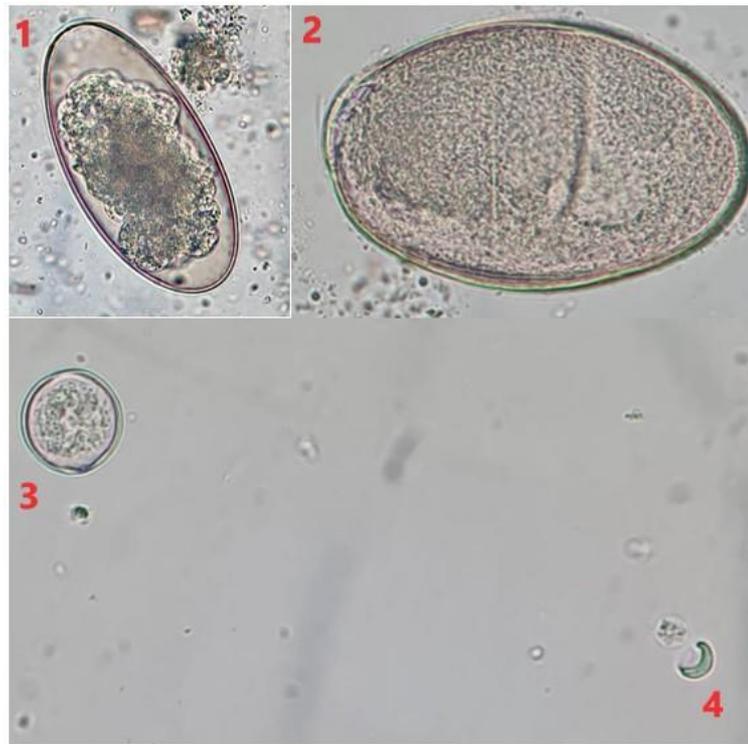


Image 1: Parasites Found: 1: *Oxyuride* Egg; 2: *Nyctotherus* Cyst; 3: Coccidian Oocyst; 4 *Giardia* cyst.

Other endoparasites such as *Giardia* sp. are commonly found in African spurred tortoise feces and can be quite debilitating to the tortoise (STAUFFER., 2003). In the parasitological evaluation of the case, two samples of giardia were positive, but one sample was negative, which is related to the intermittent cycle of parasite release (MONTEIRO, 2017).

Healthy, immunocompetent reptiles chronically release oocysts into the environment without disease manifestation. If the animals show growth retardation, regurgitation, gastritis, soft stools, lethargy, weight loss, and anorexia, these may be signs of an infection by these parasites such as *Cryptosporidium* sp (ROSTAD et al., 2019) where certain types can be an important factor of infection related mortality in *C. sulcata*.

The diversity of parasites found was only possible thanks to the use of different parasitological evaluation techniques and the processing of samples on different days due to the intermittent cycle of several parasites.

FINAL CONSIDERATIONS

The handling and adequate preventive medicine of chelonians in their different types of habitat is essential for the healthy maintenance of these animals due to the ease of contamination between them, especially the African Spurred Tortoise (*C. sulcata*), reported in this work. Thus, coproparasitological exams are an important diagnostic tool due to the great diversity of parasites and their different life cycles and forms of reproduction. Therefore, prophylactic protocols must be adopted, as well as two or more diagnostic techniques that allow the identification not only of eggs and cysts, but also of larvae. In this way, false positive results can be avoided, in order to carry out rapid and adequate treatment in order to avoid deaths of these animals.

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