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Case Report

CASE OF INTESTINAL OBSTRUCTION BY GRAVEL IN RED-EARED SLIDER *(Trachemys scripta elegans)* SOLVED WITH MEDICAMENTOUS THERAPY

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Abstract

Red-eared sliders (*Trachemys scripta elegans*) are often kept as pets, even though their sale is prohibited in many countries due the invasiveness of this species. This report describes a case of a 4-year-old red-eared slider that presented with a month-long history of lethargy and unwillingness to go into the water and was unsuccessfully treated with antibiotics and corticosteroids. Upon clinical and radiological examination, it was discovered that the patient was suffering from intestinal obstruction caused presumably by gravel stones. Medicamentous therapy consisting of meloxicam, lactulose and Ringer's solution for reptiles was then started and the turtle managed to pass all the ingested stones via the alimentary tract. Control radiological examination has shown no signs of high-density structures in the lumen of the intestines, and the turtle has made a full recovery. With enterotomy often being considered indicated in chelonians suffering from intestinal obstruction caused by gravel, this is, to the best of the authors' knowledge, the first reported case of this kind resolved solely with medicamentous therapy in a red-eared slider.

Key Words: intestinal obstruction, medicamentous therapy, red-eared slider

CASE PRESENTATION

The owners of the animal provided informed written consent for the use of data related to their pet for the purpose of publishing professional and scientific papers.

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The red-eared slider (*Trachemys scripta elegans*), native to the southwest part of North America, has been introduced throughout all continents except for Antarctica and is, therefore, considered the most widely invasive reptile species in the world (Kraus, 2009). Even though the import and selling of red-eared sliders are prohibited in Serbia (Official Gazette of the Republic of Serbia No. 99/2009-26, 6/2014-9), these animals are still available for sale and are often kept as pets (Đorđević and Anđelković, 2015). With red-eared sliders being omnivorous (Burger, 2009) and non-selective in their feeding habits, ingestion of foreign bodies (e.g. substrate) is not uncommon (Terebiznik et al., 2020). The intestinal obstruction (either complete or partial) is described as a potential indication for enterotomy or enterectomy (Doneley et al., 2018). This report describes a case of intestinal obstruction caused by substrate gravel and solved solely with medicamentous therapy in a 4-year-old red-eared slider.

A 4-year-old male red-eared slider was presented by the owners for lethargy and unwillingness to go into the water. The changes were firstly noted a month prior and the patient was taken to a veterinary clinic. After an unsuccessful course of treatment of antibiotics and corticosteroids administered orally, and with no diagnostic procedures noted, the condition worsened and the patient was referred to the Small Animal Teaching Hospital at the Faculty of Veterinary Medicine, University of Belgrade. The turtle's appetite was described as gradually decreasing. The owners answered inquiries about their husbandry and no major deficiencies were described, except for the fact that small-sized gravel lined the bottom of the aquarium. On examination, the turtle, 580 g, was hyporeactive, but no other externally notable pathological alterations were observed. When placed into water, the turtle would tilt over to the right side by approximately 45 degrees and with no ability to return to the horizontal position. Upon placing the turtle horizontally on the bottom of the water-filled container, it was unable to swim up to the surface. Radiological examination of the unsedated patient then performed and latero-lateral (LL) and ventro-dorsal (VD) projections were obtained. The native roentgenogram of the patient (Figure 1) revealed an accumulation of heterogeneously shaped and sized high-density structures inside the lumen of the intestines. The size of the structures ranged between

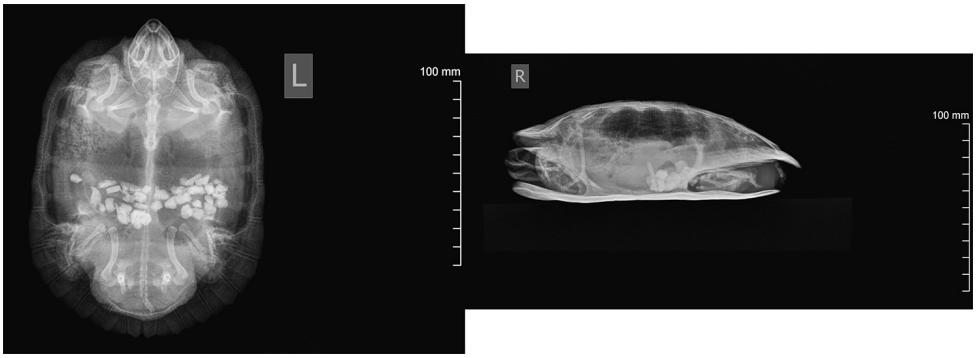

Figure 1. Radiographic image of the presented turtle (ventro-dorsal and latero-lateral projection)

11.9 × 6.9 mm (the largest) and 3.26 × 4.50 mm (the smallest). No other pathological changes were found on the x-ray images. Based on the shape, size and localization, it was presumed that the visible structures were ingested gravel. It was also determined that the structures of size presented could be eliminated through the alimentary system.

Following the diagnosis of intestinal obstruction caused by gravel, medicamentous therapy consisting of meloxicam 0.4 mg/kg, q24h, p.o. (Carpenter, 2022) and lactulose 0.5 ml/kg, q8h, p.o. (Stein, 1996; Carpenter, 2022) was started. Ringer's solution for reptiles (one-part lactated Ringer's solution, two parts 2.5% dextrose), at 20 mL/kg was administered subcutaneously (Doneley et al., 2018). The owners were advised to continue the therapy for seven days and update the veterinarians daily of the patient's current condition. They were also informed that if the gravel from within the alimentary tract was not passed by the end of medicamentous therapy, enterotomy would have to be performed.

Three days following the initial examination, the owners reported the passing of multiple pieces of gravel, as well as a notable change in the turtle's behavior for the better. Control radiological examination was performed on day 7 post the initial examination, and it revealed no high-density structures (gravel) inside the lumen of the intestines. The rest of the turtle's recovery was uneventful, and the animal made a complete recovery.

DISCUSSION

As a result of their scavenging nature and non-selective feeding, red-eared sliders often suffer from intestinal obstruction caused by the ingestion of foreign bodies (Doneley et al., 2018). The reason for lithophagy remains unknown, although it has been proposed that consumption of small amounts of gravel may mechanically aid digestion (Stein, 1996). The clinical signs of gastrointestinal obstruction are commonly non-specific, and therefore, could be misleading, if thorough diagnostic procedures are left unperformed (McArthur et al., 2004). The use of radiography (with or without contrast) is crucial for either proving or ruling out gastrointestinal obstruction in many reptile species (Büker et al., 2010). While there have been prior case reports of turtles suffering from gastrointestinal obstruction caused by foreign bodies (Rahal et al., 1998), this is, to the authors' best knowledge, the first reported case of this condition in *T. scripta elegans* treated successfully solely with medication.

While the use of prokinetics, like cisapride and metoclopramide, has been considered a standard part of the treatment course of foreign body gastrointestinal obstruction in reptiles (McArthur et al., 2004), due to the disturbed metabolic state of patients (e.g. negative calcium balance), a poor response might result from the use of prokinetics (Tothill et al., 2000). Also, with prokinetics' site selectiveness for major action within

the gastrointestinal tract, it can be argued that their use can lead to further accumulation of gravel at certain sites, following any increased motility in the proximal region. Finally, this case report presents anecdotal evidence that sufficient alleviation of pain, combined with adequate supportive care, can be enough to stimulate gut movement in turtles suffering from gastrointestinal obstruction caused by gravel ingestion.

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Authors' contributions

Both authors contributed equally to the preparation of this case report.

Competing interests

The authors declare that they have no competing interests.

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MEDIKAMENTOZNA SANACIJA OPSTRUKCIJE CREVA ŠLJUNKOM KOD CRVENOUHE KORNJAČE *(Trachemys scripta elegans)*

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Kratak sadržaj

Crvenouhe kornjače (*Trachemys scripta elegans*) su česti kućni ljubimci, iako je njihovo držanje zabranjeno u mnogim zemljama usled invazivnosti vrste. Rad opisuje slučaj crvenouhe kornjače stare četiri godine, koja je donesena na pregled zbog apatije i odbijanja da uđe u vodu, tokom mesec dana. U tom periodu je tretirana antibioticima i kortikosteroidima, ali ta terapija nije dala rezultat.

Kliničkim pregledom i radiološkim nalazom utvrđena je opstrukcija creva izazvana dekorativnim šljunkom. Medikamentozna terapija se sastojala od aplikovanja meloksikama, laktuloze i ringerovog rastvora i kornjača je posledično počela sa izbacivanjem stranih tela. Na kontrolnom radiološkom snimku nisu bile uočljive strukture velike gustine u lumenu organa digestivnog sistema.

Pošto se enterotomija često smatra indikovanom kod kornjača sa opstrukcijom creva izazvanom dekorativnim kamenjem, ovo je, prema znanju autora, prvi slučaj ove patologije saniran isključivo medikamentnom terapijom.

Ključne reči: crvenouha kornjača, medikamentozna terapija, opstrukcija creva