Parasite induced metabolic bone disease in a yearling Morelet's crocodile (Crocodylus moreletii)

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Abstract: Crocodilians have a rich diversity of host-specific parasites relative to other archosaurian descendants. While most of these relationships exhibit commensalism or mutualism, the pentastomids appear to be the only true parasite of crocodilians. Parasites like pentastomids can cause a variety of health complications in host organisms, such as vitamin and mineral deficiency in the host given the parasite absorbs these nutrients for itself. Herein, we describe the death of a wild-caught yearling Morelet's crocodile (Crocodylus moreletii) caused by pentastomid parasites. This crocodile illustrated symptoms of metabolic bone disease (MBD), i.e., severe scoliosis, malformed digits, and stunted growth, and it was presumed death was caused by MBD. Postmortem examination revealed 7 large pentastomids (Sebekia sp.) in the lungs and trachea of the yearling crocodile, and 5 small nematodes (Dujardinascaris helicina) in the stomach. The abundance of parasites found was atypical for a yearling crocodile, likely increasing its susceptibility to complications such as MBD relative to an adult. Examining size, life cycle stage, and quantity of parasites compared to host, we hypothesized that the crocodile's MBD could have been caused by the pentastomids absorbing nutrients that are essential for growth in a young crocodile. MBD is typically associated with poor diet in animals under human care, however our findings suggest a novel uncommon route or cause with implications on veterinary medicine for both captive and wild crocodilians. Additionally, these findings further illustrate the negative parasitic relationship pentastomids share with crocodilians and could provide insight into the symbiotic relationship between crocodilians and endoparasites.

Keywords: Parasite, Crocodylus moreletii, Belize, Metabolic bone disease

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