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Short Communication

Diagnosis of hypovitaminosis A in a red-eared slider turtle *(Trachemys scripta elegans)* and its successful therapeutic management

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Abstract

Hypovitaminosis A causes a progressive breakdown of the epithelial tissue of the eye and swelling of the eye in tortoises. A one and half-year-old male red-eared slider (*Trachemys scripta elegans*) with swelling of the lower eyelid, sluggish movement and anorexia was presented. The case was diagnosed as hypovitaminosis A based on clinical examination and estimation of plasma retinol level. Vitamin A was administered orally, and several managemental changes were suggested. Within one month of treatment, the swollen eye became normal, and the turtle made an uneventful recovery.

Key words: Hypovitaminosis A, Management, Red-eared slider, Swollen eye, Turtle

Highlights

- Satisfactory treatment of the swollen eyelid in a Red eared slider was performed.
- Satisfactory management of hypovitaminosis A in a Red eared slider was done.
- Satisfactory differential diagnosis of the swollen eyelid in a turtle with other ocular diseases of turtle was performed.
- Prevention of hypovitaminosis A in turtle has discussed.

There is an increase in interest for exotic pets among people. Among various exotic reptiles and pets, red-eared slider (*Trachemys scripta elegans*), a semi-aquatic turtle, are very common. Most of them suffer from nutritional and infectious diseases due to improper nutritional and husbandry management (Varshney *et al*., 2016). An improperly balanced diet can lead to several disorders in turtles. Palpebral oedema and hyperkeratosis of the harderian glands are very common results of ocular disease (Henriksen, 1972). Eyeballs remain uncovered as a result of the inflamed nictating membrane, which leads to blinding of the affected eye (Elkan and Zwart, 1967). At this stage, the pet refuses to eat and dies of starvation. The cause of this condition is commonly believed to be a lack of vitamin A. Other potential etiologies include: bacterial or nematode obstruction of the gland duct, inadequate temperature control, or improper water lime levels (Henriksen, 1972). Lack of adequate amounts of vitamin A can cause a progressive breakdown of the epithelial tissue of the eye, which can make it more vulnerable to swelling (Marie, 2020). Management of this condition typically consists of vitamin A supplementation along with daily antibiotic ointment, warm boric acid bath, or an hour a day swimming in warm tea or aquarium salts (Henriksen, 1972).

A one and half-year-old male red-eared

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slider turtle weighing 700 g was referred to the Department of Veterinary Clinical Complex, Lakhimpur College of Veterinary Science, Joyhing, North Lakhimpur, Assam, India with a history of edematous swelling of the lower eyelids of both eyes, sluggish movement and anorexia for the last three days.

The pet was housed in an aquarium and maintained on a commercially available turtle feed (composition: white fish meal, shrimp meal, wheat flour, corn meal, yeast enzyme, calcium, magnesium, vitamin A, C, E and trace minerals). On admission after proper restraint, physical examination was carried out, which revealed swelling of the lower eyelids of both eyes (Fig. 1) without any other detectable abnormalities.

At this stage, the owner declined for complete blood count and multiple biochemical analyses, so based on the relevance of the symptom with vitamin A deficiency, it was decided to go only for plasma analysis for retinol. Blood was collected aseptically in an EDTA vacutainer from the jugular vein. The turtle was held firmly to grab its head, and the neck was extended; a slight bulge was observed, keeping the needle parallel to the neck and blood was collected from the jugular vein. Plasma analysis performed at a privately owned laboratory, plasma retinol value: 0.020 mg/mL, reference range; 0.034 to 0.415 mg/mL (Mayer and Huang, 2018).

Based on the history, clinical findings and plasma retinol value, it was confirmed to be a case of hypovitaminosis A. The client was advised to change the aquarium water at one to two days interval with groundwater maintaining at 28-32ºC and the pet to be exposed to sunshine for about one hour every day. The tutle was treated with vitamin A supplement (Vitamin A chewable tablet, Abott Health care Pvt. Ltd.) at 21,000 IU once on the first day PO followed by weekly 5600 IU PO for four occasions with feed i.e., grated carrot and green leafy vegetables (Mejia-Fava and Colitz, 2014).

Re-examining the pet after one and half months revealed swollen eyelids became normal with no ocular discharge (Fig. 2), and plasma retinol value was within the reference value (0.038 mg/mL).

At present, among different exotic pet lovers, red-eared slider turtles are preferred due to their small body size, long life span, reasonable treatment prices, and adaptability to environmental conditions (Corum *et al*., 2019; Burger, 2020). Among different diseases, the swollen eyelid is commonly reported in turtles. Vitamin A is a major etiology for swollen eye syndrome in turtles (Varshney *et al*., 2016). Turtles fed with commercially available diets are prone to develop vitamin A deficiency (Anonymous, 2020). The tissues of the ocular epithelial are prone to vitamin A deficiency (Jacobson, 2007) is a predisposing factor for swollen eye syndrome (Henriksen, 1972; Varshney *et al*., 2016). Vitamin A supplementation is suggested to be the most important aspect of management of hypovitaminosis A, along with regular changes of water (Henriksen, 1972; Varshney *et al*., 2016). Green leafy vegetables and carrots contain sufficient amount of vitamin A (Anonymous, 2020). Similarly, in the present communication, swollen eye syndrome in the turtle was managed by changing the housed water and supplementing the feed with vitamin A, carrot, and leafy green vegetables.

The deficiency of vitamin A in turtles can be managed by external supplementation of Vit. A and providing vegetables which are a rich source of Vit. A.

Conflict of interest: Authors have no conflict of interest in this study.

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Fig. 1. Photograph showing swollen eyelids (before treatment)

Fig. 2. Photograph showing normal eyelids (after treatment)

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