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Diagnosis and successful therapeutic management of conjunctivitis associated with hypovitaminosis A in a juvenile red-eared slider (*Trachemys scripta elegans*)

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Abstract

Red-eared sliders (*Trachemys scripta elegans*) are most prone to suffer from conjunctivitis with improper husbandry care. A Red-Eared slider with closed eyes was presented to the Veterinary Hospital, Athagarh, Cuttack, Odisha with chief complain of anorexia and closed eyelids since 15days. As per the anamnesis the water of container was not changed regularly by the owner, treated with multi-vitamins and antibiotics for two weeks showing no improvement in condition. Clinical examination represented swelling and inflammation of both the lower eyelids. Conjunctivitis was diagnosed basing on clinical examination and history. Treatments consist of oral antibiotic Clindamycin BID PO, topical Ciprofloxacin eye drops and Cap. Vitamin A on alternative days for twenty day and improvement in husbandry care. The turtle started to eat three days post treatment with uneventful recovery after twenty days.

Keywords: Conjunctivitis, edema, hypovitaminosis a, *Trachemys scripta elegans*, turtle

1. Introduction

Red-eared slider (*Trachemys scripta elegans*) is thought to have poor eyesight with bigger and stronger lower eyelid. There is an increasing rate of interest for various exotic pets among people. Red-eared slider is a medium-sized fresh water turtle, are the most commonly liked species among the pet lovers. The most noticeable features are the red stripes behind each eye. This particular turtle species has been labeled as an invasive species in many parts of the world with a very high tolerance level of adaptation. Found to reproduce in many non-native areas with different ecology (Zhang *et al.*, 2019) ^[1]. Relating to their husbandry management Red-eared sliders are prone to various diseases (Govendan *et al.*, 2020) ^[2]. They mostly suffer with deficiency and infectious diseases due to mis-management of nutrition and husbandry (Varshney *et al.*, 2016) ^[3]. Hyperkeratosis of harderian glands and Palpebral edema are the common clinical signs of eye disease (Henriksen, 1972) ^[4]. Inflamed nictating membranes prevent the complete closing of eyeballs resulting in blindness of the affected eye (Elkan and Zwart, 1967) ^[5]. Progressive breakdown of the epithelial tissues of eye can occur due to lack of adequate amounts of vitamin A, making it more vulnerable to infection (Marie, 2020) ^[6]. Slider species, especially the hatchlings and juveniles most commonly suffer from eye infection. Lack of knowledge regarding proper husbandry care by the turtle vendors is one of the main reasons for this problem (Govendan *et al.*, 2020) ^[2]. Edema of eyelids, exophthalmia and, conjunctivitis are the common clinical signs of hypovitaminosis A in turtles (Tanase *et al.*, 2014) ^[7]. In ectothermic animals, such as reptiles Ultra-violet B (UVB) is an important component for stimulating vitamin D3 synthesis (Alarcon, 2016) ^[8]. Turtles kept in outdoor enclosures will have better thermoregulation by frequent basking activity. However, those kept in-door can be facilitated by UVB lighting (Oonincx and Leeuwen, 2017) ^[9].

2. Case history

An unsexed young juvenile red-eared slider (*Trachemys scripta elegans*) was presented to the Veterinary Hospital, Athagarh, Cuttack, Odisha with history of anorexia, dull and swollen closed eyes. The owner kept the red-eared slider in a container with no exposure to sunlight,

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no regular change of water and feeding was performed in same container. The turtle was treated with multi-vitamin and antibiotics for two weeks with no improvement in condition.

3. Clinical examination

Ocular examination revealed bilateral swollen closed eyelids without any ocular and nasal discharge. Both the eyes were inflamed and hyperemia on the conjunctiva. Pupil and palpebral reflex examination was positive.

4. Diagnosis

Based on history and clinical examination the turtle was tentatively diagnosed with conjunctivitis with hypovitaminosis A.

5. Treatment

The Red eared turtle was treated with oral antibiotic Clindamycin @ 5 mg/kg b.wt. PO BID and Cap. Vitamin A @10,000 IU/kg on alternative day, Ciprofloxacin –D eye drop was administered on the both eyes twice daily for 20days. After administration of eye drop the turtle was placed on dry-dock for almost 30 minutes. The client was advised for daily change of container water, maintaining the water temperature between 28-32 °C and two hour exposure to sunshine every day.

6. Evaluation

After three days of treatment the turtle started eating by the smell of feed, as the eyes were still closed. By day nine the turtle started to slightly open the eyelids. By day twenty the inflammation of the conjunctiva completely subsided and the turtle eye was normal with clear conjunctiva.



Fig 1: Before treatment (Day 0) Red eared slider turtle with closed swollen eyelids



Fig 2: After treatment (Day 4)



Fig 3: After treatment (Day 9)



Fig 4: After treatment (Day 20)

7. Discussion

In the present scenario, red-eared sliders are more favoured due to their tiny size, long life span, economical treatment cost, and their quick adaptability to the environmental conditions (Corum *et al.*, 2019) ^[10]. Swollen eyelids are commonly reported in turtles with Hypovitaminosis-A (Varshney *et al.*, 2016) ^[3]. Conjunctivitis could be identified in the turtles presented with inflamed eyes (Sharun *et al.*, 2019) ^[11]. Conjunctivitis is a common clinical sign of hypovitaminosis A in captive turtles (Tanase *et al.*, 2014) ^[7]. Vitamin A is known to have role in epithelial cell formation, maturation, and metabolism (Tanase *et al.*, 2014) ^[7]. Deficiency of vitamin A may lead to a continual breakdown of the eye epithelial tissue (Lawton, 2006) ^[12]. Further replacing the mucus-secreting cells with the keratinized squamous epithelium and accumulating in the ducts leading to dilation of gland lamina that will cause blocking of the ducts that inhibit tear productions and swollen eyelids. The eye will lose its protection, nutrition, and lubrication resulting in the opportunistic bacteria to infect the host causing conjunctivitis (Fleming, 2019) ^[13]. Improper husbandry, malnourished, congenital, and traumatic lesion could cause eye infection in chelonians (Fleming, 2019) ^[13]. *Aeromonas hydrophyla*, *Bacillus* sp., *Proteus vulgaris*, *Pseudomonas* sp., and *Staphylococcus aureus* are the commonly identified pathogens of eye infections (Somma *et al.*, 2014) ^[14]. The safest dose for administering vitamin-A is 5000-10,000 IU/kg. Oral Vitamin-A administration can decrease the risk of overdosing (Sagar *et al.*, 2021) ^[15].

Topical Ciprofloxacin eye drops were administered twice daily for 20 days. Antibiotic was used in the study to eliminating bacterial infection that causes conjunctivitis in the turtle, which was the primary cause of the condition. After the use of topical antibiotic the turtle was placed in a dry environment for allowing better drug penetration. To counter hypovitaminosis A Vitamin A was diluted for PO administration once on alternate days. Regular changing of water and exposure to sunlight was advised to maintain proper husbandry.

This present case study similarly revealed that conjunctivitis with hypovitaminosis A can be managed by supplementation vitamin A, antibiotics and proper husbandry care of the pets.

Conflict of Interest

Not available

Financial Support

Not available

8. References

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