Ascaridia galli infection in a checkered keelback (*Xenochrophis piscator*) snake

Ananda K. Javare Gowda¹ · B. Kavitha Rani² · C. Nandeesh³ · Yashaswi Naravi³

Received: 2 November 2014 / Accepted: 8 March 2016 / Published online: 29 March 2016
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Abstract The checkered keelback is also known as Asiatic water snake and is common species of non-venomous snake known to occur in India. The present study report the occurrence of *Ascaridia galli* infection in a checkered keelback snake, which was found dead near Veterinary College hostel premises. The post-mortem examination of the snake revealed catarrhal exudate without ingesta in the stomach and showed gastric ulcerations with edema. Large numbers of round worms were packed in the lumen of small intestine with petechial haemorrhages and necrotic enteritis. The nematode parasites were recovered and processed for identification. Based on morphological characters, the worms were identified as *A. galli* and the intestinal contents of the snake showed *A. galli* eggs.

Keywords Checkered keelback snake · Postmortem · *Ascaridia galli* · Feces

Introduction

The checkered keelback snake (*Xenochrophis piscator*) is also known as Asiatic water snake, is a common species of non-venomous snakes known to occur in many parts of

India. These snakes are usually seen in freshwater lakes or rivers. The most serious health problem faced by these snakes is internal parasites because of their diet, since they are usually feed on earthworms, fish and amphibians which are potential carriers, but wild-caught amphibians appear to be the worst. Live fish are also frequently the source of persistent parasitic infections.

Internal parasites are one of the most common illnesses found in snakes. Many people believe that internal parasites only plague wild-caught snakes, however this is far from the truth. Internal parasites can be passed on to captive bred snakes by contact with other infected snakes. Snakes can also contract internal parasites from infected prey and are often difficult to detect in snakes, and a fecal sample will need to be taken to the veterinarians for a proper diagnosis. Symptoms of internal parasites can include regurgitation, weight loss and a lack of appetite. The snakes are exposed to numerous parasites since they feed principally on live mammals, amphibians, insects and occasionally on animals of their own kind (Page 1966). The occurrence of many helminth parasites in snakes were reported by some workers from different parts of the country and worldwide viz., nematode parasites in snake (Sabu et al. 2002), spirurid nematodes (Jones 1995) and *Strongyloides* spp. and *Strongyle* spp. infection (Jayathangaraj et al. 2006) and spirurid infection in Green Keelback *Macropisthodon plumbicolor* (Pandit et al. 2010). The health monitoring and disease diagnosis in snake is a challenging job for veterinarians, since difficulty in collection of clinical samples and also, there is a dearth of information regarding parasitic infection in Indian snakes. Therefore, the present study reporting the occurrence of *Ascaridia galli* infection in checkered keelback snake from Shimoga, Karnataka state.

✉ Ananda K. Javare Gowda
dranandakj@yahoo.co.in

¹ Department of Veterinary Parasitology, Veterinary College, KVAFSU, Shimoga 577204, India

² Department of Veterinary Pathology, Veterinary College, KVAFSU, Shimoga 577204, India

³ Veterinary College, KVAFSU, Shimoga 577204, India

Fig. 1 Checkered keelback snake

Fig. 2 Adult worms in the abdominal cavity

Materials and methods

The checkered keelback snake was found dead in the hostel premises of Veterinary College, Shivamogga, Karnataka state near the inland lake and was received for post mortem examination. Post-mortem examination of the snake was conducted and gross pathological lesions were recorded. The organs and the digesta were thoroughly examined for presence of parasites and related lesions. The intestinal contents were collected, processed and examined for detection of parasitic eggs by sedimentation and floatation techniques (Bowman 2009). The nematode parasites were collected from stomach and intestine in a phosphate buffer saline, washed thoroughly for three times to remove the adhered debris and then processed for identification. The identification of eggs and parasites was carried out based

Fig. 3 Adult worms recovered from the snake

Fig. 4 Anterior end of *A. galli* adult worm ($\times 400$)

on the morphological characters (Soulsby 1982; Bowman 2009).

Results and discussion

The wild animals harbour many parasites naturally, but severity depends on the status of the body (Gaur et al. 1979). But parasitic infections constitute one of the major problems causing even mortality in wild animals maintained in captivity (Rao and Acharjyo 1984). Inadequate information on parasitic diseases of wild animals is of

Fig. 5 Posterior end of *A. galli* adult worm ($\times 400$)

major limiting factor in zoological gardens (Rajashekaraiah et al. 1971). It is well understood that, almost all species of wild reptiles and amphibians harbour variety of parasites. The diagnosis of endo-parasitic infection requires examination of various specimens including faeces, blood, urine and washings from the lungs etc. The special laboratory procedures are necessary to process the specimens along with microscopic examination. In general, the parasitized reptiles have a shorter lifespan; tend to be more susceptible to disease and unthrifty appearance. In the present study, a checkered keelback snake (Fig. 1) was found dead in Veterinary College, Shimoga near the inland lake. Byron de la Navarre (2008) considers the high parasitic load with the stress due to poor husbandry is the probable reason for death of snake.

Gastric ulcerations with edema throughout the small intestine with large number of parasites were evident in the intestine (Fig. 2). Further, multiple petechial haemorrhages on the mucosa of small intestine and necrosis of large intestine was in evidence.

Recovered parasites were processed (Fig. 3) and based on morphological characters they were identified as *Ascaridia galli* (Figs. 4, 5). The *A. galli* is the nematodes of birds especially the domestic fowl (Soulsby 1982). The contamination of water bodies where the snakes dwell could be one of the reason for the parasitism in the snake. The water bodies might have contaminated due to contamination of excreta of birds due to washing of birds before retailing as snake was found dead, where people used to wash the slaughtered birds. Hence, the present study demonstrating that, the water snakes can act as a host for *A. galli*. Further, they may serve as a source of infection for other similar reptiles. Among different parasites of snakes, Ascarid nematode is one of the

Fig. 6 Gut content of snake showing eggs of *A. galli* ($\times 1000$)

most important pathogen for snakes and infestation can be fatal (Beck and Pantchev 2006). Pandit et al. (2010) reported a similar case of infection of nematodes in Green Keelback snake and species identified as *M. plumbicolor*, whose intestines were found hemorrhagic and the stomach had ulcers. The incidence of nematodosis have been documented in snakes by various authors like Sabu et al. (2002), Jones (1995) and Jayathangaraj et al. (2006), and reported the occurrence of *Rhabditid* spp., *Spirurid* spp. and *Strongyloides* spp. respectively.

In the present study, the qualitative method of faecal sample examination of the snake showed numerous *A. galli* eggs (Fig. 6). This is in accordance with the Ashlesha et al. (2009) who studied the prevalence of gastrointestinal parasites in snakes and found Banded racer snake positive for *Ascarid* spp. by faecal sample examination. Rataj, et al. (2011) studied the prevalence of endo-parasites in snakes of Slovenia by faecal sample examination and found 26 (47.3 %) snakes positive for eggs of *Strongylid* spp., *Ascarid* spp., *Capillaria* spp. and *Porocephalus crotali*. The present study indicates that, epidemiological study of parasitic diseases is necessary owing to scarcity of information regarding the parasitic diseases of snakes.

Acknowledgments The authors are thankful to the Dean, Veterinary College, Shimoga for providing facility to carry out the work.

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