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Occurrence of *Porocephalus crotali* in lung tissue of an Indian rat snake (*Ptyas mucosa*): A case report

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Abstract

A rescued Indian Rat Snake (*Ptyas mucosa*) of 8 feet long was presented to Animal Rahat with no history of beating/getting injured an accident with symptoms of twisting of neck with little activity. This was treated symptomatically and get x-ray done which revealed worms like structures in the first one third part of snake and snake did not respond to treatment & died. Dissection of lungs showed live cylindrical worms and their mouth part which were embedded in lung tissues. These worms were separated from lung tissue and ulcers like lesions were caused on the lung tissue where the worm's mouth part was inserted. These worms were identified as *Porocephalus crotali*.

Keywords: Indian rat snake, lung, *Porocephalus crotali*, necropsy, ulcer like lesions

Introduction

Indian Rat Snake (*Ptyas mucosa*) belongs to the family Colubridae which is the largest family of snakes and constitutes about two third of snake species. Indian Rat Snake is commonly known as Dhaman snake, is diurnal and semi arboreal snake species that inhabits forest floors, agriculture lands, wet land and also near to human habitats who that feeds on frogs, rats etc. This snake has a wide distribution in Asia including India. (Amit Manhas *et al* 2016) ^[1]. *Porocephalus crotali* – *Porocephalus crotali* (Humboldt, 1811) is a pentastomid and adults are worm like and are found principally in the respiratory tract of reptiles on the surface of lung or air sacs distal to the lung. Sexual dimorphism is pronounced; females are larger than males. The head of the female is separated from the trunk by a distinct neck. (Bino Sundar *et al* 2015, Aynimode *et al* 2010, Aleksandra Vergles Rataj *et al* 2011) ^[2,3,4]. In a typical pentastomid life cycle, eggs are ingested by an intermediate host and develop into nymphs in multiple tissues. The definitive reptile host ingests the intermediate host, and the parasite usually matures in the lungs. Adults with mature eggs may be expelled from the trachea and eliminated from the definitive host through oral expulsion. These adults may also be swallowed, resulting in shedding eggs in the faeces. (Brookins *et al* 2009) ^[5] Adults have a cylindrical, segmented body with hooks arranged in the form of an arc or a trapeze. The internal organs occupy the whole of the abdomen. (Bino Sundar *et al* 2015) Two unequal pairs of hooks are located at the anterior ventral end around the mouth. Infection is without pathogenic effect generally, either in the snake or the intermediate host, but very heavy infections may lead to death of snakes. (Bino Sundar *et al* 2015). Pentastomiasis is a zoonotic disease of the human and other animals (Aynimode *et al* 2010) ^[3]. The aim of article is to present the findings of *Porocephalus crotali* in lung of Indian Rat Snake which is first report from Maharashtra, India.

Case Detail

A rescued Indian Rat Snake of 8 feet long was presented to Animal Rahat with no history of beating/getting injured an accident with symptoms of twisting of neck (Fig-1) with little activity. This was treated symptomatically and get x-rays of snake to rule out any fracture of vertebral column. X-ray revealed worms like structures in first one third part of snake body (Fig-2) and snake did not respond to treatment and died. Then post-mortem was conducted to find out the cause of death.



Fig 1: Indian Rat Snake was presented with twisting of neck

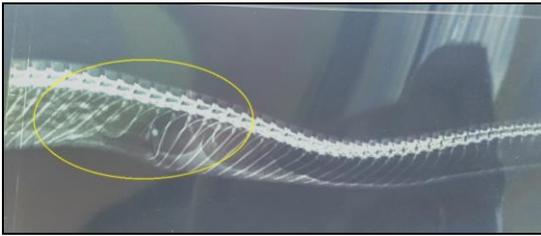


Fig 2: X-ray of Indian Rat Snake revealed worms like structure in first one-third part of snake's body

Necropsy findings

Gross examination

Necropsy examination of snake's lung revealed the presence of cylindrical shaped worms. Mouth parts of worms were inserted in lung tissue (Fig-3). All worms were alive. Total 8 live worms were collected from lung tissue. Seven of them were of equal size while one was very short in length (Fig-4). The length of seven worms was 3-4 inches while one was 0.5 inches in length. On removal of worms from lung tissue, ulcers like lesions were visible where their mouth parts were inserted (Fig-5).



Fig 3: Worms were found in lung tissue during necropsy



Fig 4: Collected worms

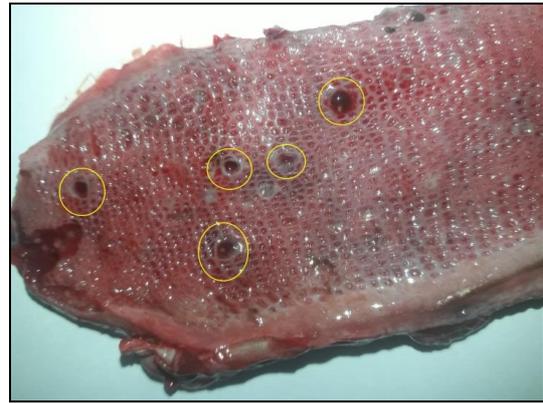


Fig 5: Thorough examination revealed ulcers like lesions on the lung tissues (where the mouth parts of the worms were inserted) after removal of worms

Two equal sizes of hooks were present at the anterior part of worms (Fig 6-7). Entire abdomen is occupied by internal organs. (Fig-8)

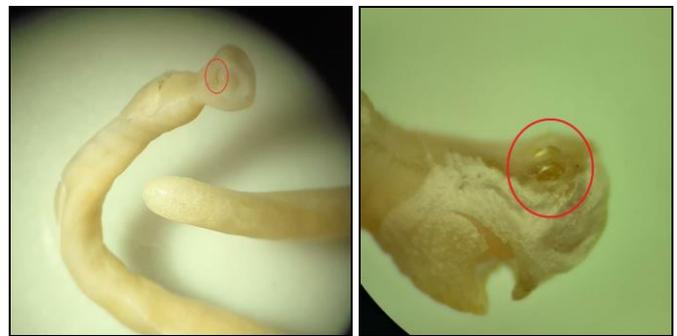


Fig 6-7: Hooks were present at anterior part of the worm



Fig 8: Entire abdomen is occupied by internal organs

Discussion

Worms encountered in this case were cylindrical and based on the length and other features, the anterior end had hooks arranged in the form of an arc or trapeze with a keyhole shaped mouth in the middle, the internal organs were fully occupying the whole of the abdomen. All these morphological characters were similar with the study of Bino Sundar *et al* 2015. Snakes harbour diverse species of endoparasites, such as protozoans, nematodes, cestodes, pentastomids, acanthocephalans and trematodes, which can lead to serious diseases. These infected snakes have compromised immune responses and are susceptible to further infections which can spread to other animal species and even to humans. (Sulekha Akhila *et al* 2018, Aleksandra Vergles Rataj *et al* 2011) [6,4].

Aynimode *et al* (2010) ^[3] reported the destruction and impairment of lung function by tissue perforation producing haemorrhages in the royal python which was similar to the present study. Deakins, Dennis Eugene (1973) ^[7] studied in water moccasin snake that death of snake is due to intense inflammation of lung with evidence of transudation and haemorrhages.

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