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Necropsy and histopathological findings of an Indian rock python (*Python molurus Molurus*) died of accidental traumatic shock: A case report

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Abstract

A carcass of a male Indian rock python measuring about 4.25 meters in length and 25 kg in weight was presented to the Department of Veterinary Pathology, College of Veterinary and Animal Sciences, GBPUA&T, Pantnagar on 24.08.2011 for conducting necropsy examination. The history revealed motor vehicle crushing trauma (road accident) on the previous day at 4 P.M. Gross pathological findings revealed crushed wound behind the head and neck with exposed bone. Necropsy findings revealed lesions of lung areas that had ruptured and lead to massive external and internal hemorrhage. Liver and spleen was also crushed in. The air sacs were full of clotted blood and intestine had infestation of few round worms (*Ophidascaris sp.*) measuring about 4-5 inches in lengths and 2 plastic wires of approximately one and a half feet long. There was an enormous amount of clotted blood in the respiratory tract. Kidney and reproductive organs revealed no gross lesions. Histopathological examination of lungs, air sacs and liver revealed massive hemorrhagic lesions. On the basis of gross and histopathological findings it was diagnosed that death occurred due to cardio-pulmonary arrest (traumatic shock) as a result of massive blood loss due to rupture of venacava, major aorta, lungs and liver.

Keywords: necropsy, python, traumatic shock

1. Introduction

The Indian rock python (*Python molurus molurus*) belongs to reptiles, order-Squamata, suborder- Serpentes, the family Boidae. The Indian Python (*Python molurus*) is primarily a tree-dwelling snake that was once common throughout the jungles of India, Pakistan, Sri Lanka and the East Indies. One of the world's largest snakes, it can grow over 20 feet long (6 m). Although endangered, pythons are numerous in the hilly areas of Chittagong and frequently reported to be rescued from human habitats. Their preferred habitat is scrubland, but with the introduction of modern farming methods in India, these areas are being developed for agricultural use. Recently, roads have been recognized to produce various kinds of ecological consequences including habitat loss and fragmentation [1-3]. Now, roads have become one of the growing threats to animal and plant populations [4]. Studies dealing with mortality of relatively slow moving animals with limited dispersal ability, such as reptiles have been conducted elsewhere [5, 6]. In India few studies were carried out to address the issue of herpetofaunal mortality on roads [7-9]. Road mortality rate of snakes was reported 0.198 snakes/km/day [10]. The Indian Python has become endangered in Sri Lanka and India [11]. Here a carcass of python presented for post mortem examination died due to road accident has been described below.

2. Materials and Methods

A carcass of Indian Rock Python was presented for post-mortem examination with the history of crushing by heavy motor vehicle on highway nearby Pantnagar bypass (Indira colony) at approximately 4 P.M. on 23.08.2011. The post-mortem examination was done in the Department of Veterinary Pathology after obtaining requisition of the Department of Wildlife following standard protocol [12]. PM examination was conducted immediately to avoid putrefaction. All the precautionary measures were taken during PM examination to avoid contact with zoonotic agents. The carcass showed the state of passed off rigor mortis. The whole barrel- shaped body cavity was opened from mouth to tail. The gross PM findings were recorded immediately and heart, liver, spleen, kidney, lungs, trachea along with the whole skeleton and skin were collected separately and preserved for histopathological examination.

Nematode parasites were also collected and preserved for identification. After PM examination the carcass was handed over to the Wildlife Department for proper disposal (deep ditches layered with lime).

3. Results and Discussion

A carcass of the male Indian Rock Python was measured about 4.25 metres (13.94 feet) long weighing about 25 kg (Fig. 1). Gross pathological examinations demonstrate crushing wound approximately 0.75 metres (2.46 feet) behind the head and neck which leads to exposition of skin and bone (Fig. 2). State of rigor mortis was passed off and emitting offensive/putrid smell from the carcass.

The crushing of the lungs and liver just behind the 3-chambered heart (Fig. 4) leads to rupture of posterior venacava and major aorta. Both left and right (functional) lungs and liver showed massive internal haemorrhage (Fig. 5); thereby the whole air sacs, body cavity were filled with dark coloured clotted blood (Fig. 6). Stomach was having several (6-10) living round worms (*Ophidascaris sp.*) of 4-5 inches long^[13] (Fig. 7) and two plastic wires of about 1.5 feet long (Fig. 8). However, gall bladder, spleen, elongated cylindrical paired kidneys (Fig. 9), paired testicles and external male genitalia (Fig. 10) were found intact.

Snakes are basically just like long tube and accordingly the internal organs are also elongated in shape, it is possible to partition their main anatomical parts into sections. The first 25 percent of the snake was consisted head, the esophagus and trachea, and the heart. In the second quarter, about 26 to 50 percent of the snake was the top of the lungs, the liver, and then three-fourths of the way down the liver, the stomach. In the third quarter, about 51 to 75 percent of the snake consisted gall bladder, the spleen and the pancreas. Following this triad of organs the gonads (testes) were situated. Coursing between these structures was the small intestine, and adjacent to them was the right lung. In the last quarter, 76 to 100 percent of the snake, it was found the junction between the small and large intestine, the caecum, the kidneys (right in front of the left) and the cloaca.

Traumatic asphyxia is a form of mechanical asphyxia where respiration is prevented by external pressure on the body: a heavy weight compressing the lungs or abdomen, wedging of the body within a narrow space death in large crowds have been reported^[14-16].

The brain appeared normal on gross and in histopathological examination. Tracheal mucosa was hyperaemic and filled with clotted blood. Heart appeared normal but there were petechial areas behind the atria; the aortic arch and valves appeared normal. Most organs were severely congested. Macroscopic examination of lungs revealed extensive damaged and huge bleeding areas; histopathological examination showed interstitial and hemorrhagic alveolar oedema of the lungs.

Death was encountered due to automobile crushing/traumatic wounds, mainly damaging the body parts situated at anterior portion of the second section of the body. Massive crushing injuries might have disrupted the mechanism of breathing and hypovolaemic shock. These events could have threatened life within a few minutes of injury, and lung injuries are a common cause of traumatic deaths out of hospital. These events can also develop quite suddenly or insidiously several hours after the injury, depending upon the severity and organ affected. The more serious injuries are usually observed as a result of road traffic accidents. There may be direct injury to the lung area with or without damage to the underlying

organs. High speed accidents, including road traffic accidents may result in the contents of the pulmonary area moving relative to each other resulting in tearing of the tissues, including major blood vessels. Penetrating thoracic injuries are much less common but carry a high risk of serious damage to structures inside the pulmonary area such as lungs, heart or major vessels.

The most susceptible to road accidents are migrating individuals that have just hatched, males searching for females, and female looking for somewhere to lay eggs^[17]. In the present case absence of feed/ingesta in the stomach/intestine might have suggested that the python was wandering in search of food and was killed by automobile accident while crossing the highway. The negative effect of roads on snake population is two-fold. First, the high road mortality directly reduces the number of living and reproducing snakes. Second, habitat fragmentation by network of roads exerts a significant, negative effect on movements and mate location by snakes^[18]. On the basis of gross and histopathology, the death was due to traumatic shock/accidental shock or it could have been due to asphyxia as a result of acute cardio-pulmonary function arrest. Similarly, the possible cause of death in Indian rock python was reported due to traumatic injury inflicted by the local people^[19]. In contrast, python killing their owners have been documented^[20].



Fig 1: Carcass of a male python measuring about 4.25 meters in length and 25 kg in weight



Fig 2: Dorsal view of carcass during gross PM examination of crushed wound approximately 0.75 metre behind the head and neck with exposition of skin and bone



Fig 3: Ventral view of carcass during gross PM examination of crushed wound approximately 0.75 metre behind the head and neck with exposition of skin and bone



Fig 4: 3-chambered heart containing clotted blood with petechial haemorrhage



Fig 5: Extensively crushed left lung and huge bleeding areas



Fig 6: Cylindrical clotted blood in the air sac



Fig 7: Live round worms (*Ophidascaris sp.*) inside stomach



Fig 8: Intestine containing plastic wires



Fig 9: Intact elongated left (LK) and right (RK) kidneys



Fig 10: External male genitalia

4. Conclusion

On the basis of gross and histopathological findings it was concluded that the death occurred due to cardio-pulmonary arrest (traumatic shock) as a result of massive blood loss due to rupture of venacava, major aorta, lungs and liver.

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