

Burkholderia cepacia* Infection in *Python reticulatus

Steven Dwi Purbantoro¹, Erika¹, Puveanthan Nagappan Govendan¹, Yedija Putra Kusuma Wardana Rumbay¹, Aida Louise Tenden Rompis^{2*}

¹Student, ²Division of Bacteriology and Mycology, Faculty of Veterinary Medicine, Udayana University Denpasar Bali Indonesia

*Corresponding author's email: tenden_rompis@unud.ac.id; aida.lt.rompis@gmail.com

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INTRODUCTION

Boids kept as exotic pets nowadays has increased in recent decades [1]. Its popularity has increased in Indonesia. Without proper husbandry, snakes have higher risk for infection, such as respiratory infection. Respiratory infections are common in captive snakes that could cause severe illness leading to death [2]. Many etiologies say respiratory infection in snakes, are mainly caused by bacteria. Microbiology test is one of the diagnostic method which could be performed to diagnose for a better treatment to identification the cause of the infection. API 20NE kit is a choice. *Burkholderia cepacia* is a bacterial infection which could occur in pythons. This case reports *Burkholderia cepacia* finding in a *Python reticulatus* that had respiratory infection.

CASE REPORT

A wild caught female python (*Python reticulatus*) with 250 cm length (snout-vent) and weight 2.8 kg was kept in captivity since 2015 in Denpasar, Bali. It was fed live chicks, rats, and cavies every 5 to 10 days. Newspaper was always placed at the bottom of the enclosure. In April 2016, the snake was submitted with complains of wheezing, sneezing and watery nose for several weeks. During clinical examination, the snake showed dyspnea with oral breathing by extending its head and an opening-mouth, and watery nostrils. The mucous membrane was pale and excessive oral discharge, dysecdysis was observed, crackles sounds were noticed during auscultation.

Treatments for the respiratory infection including Enrofloxacin 10 mg/kg daily for 3 weeks, Meloxicam 0.1 mg/kg daily for 3 days, and vitamin B complex 1.0 ml was given once. All medicines and vitamin were administered by intramuscular. Fluid therapy at 20 mL/kg was indicated because particular snake was dehydrated. The animal was given 56 mL of NaCl 0.9% intracoelomic every 48 hours for 5 times.

A glottis-tracheal swab was collected from the snake aseptically for microbiological observation. Glottis-tracheal opening was helped with a blunt spatula. Swab was performed with a

sterile swab stick in the glottis to tracheal and rolled over several times before direct culture aerobically onto Blood Agar (BA) and MacConkey Agar (MCA) incubated at 37°C for 24 to 48 hours. One type colony was isolated from each media. Small whitish non-hemolytic colonies on BA and cream dry non-lactose-fermented-colonies on MCA were found as macroscopic morphology on the media with its quantity of the colonies were growing severely (+++). Each type colony was sub-cultured then further identified using the conventional methods (Gram staining and biochemical test using the API 20NE kit of identification of non-lactose fermenting Gram-negative bacilli). Based on the API test *Burkholderia cepacia* was identified.



Figure (left): collection of glottis tracheal swab sample; (right): colonies of *Burkholderia cepacia* on Blood Agar

At 2 months post treatment, physical and respiratory examination was conducted. The respiratory signs were significantly improved with improved breathing, decreased nasal discharge and wheezing. The owner was educated to have a better hygiene, adequate diet, and proper environmental condition, such as not too low or high in humidity and temperature and housing towards the snakes to protect themselves from zoonotic infection.

DISCUSSION

Burkholderia cepacia is a newly-created genera from *Pseudomonas* genera [3]. *Burkholderia cepacia* is a bacilli Gram-negative microorganism

widely spread in the environment and known as opportunistic pathogen for animal and humans – zoonotic pathogen [3]. This zoonotic pathogen is highly transmissible, has inherit resistance to multiple antibiotics and associated with greater virulence [4].

The bacterium is known as its involvement in several pathologies of reptiles, such as urinary tract, skin, soft tissue, bone, joint, gastrointestinal tract, and respiratory tract [3]. *Burkholderia cepacia* infection could cause cystic fibrosis which can cause “cepacia syndrome” in human [5]. Santos *et al.* [6], reported *B. cepacia* in snakes with pneumonia similar to this study where the snake in this case was having pneumonia signs. Similar study also found that dyspnea, oral cavity discharge and dysecdysis were the clinical signs of *B. cepacia* infection with fly larvae infection [7].

This zoonotic pathogen mainly occurs in an individual with immunocompromised state [3,7]. In this case study, the snake was suspected in immunocompromised state due to poor husbandry and hygiene which caused chronic stress to the snake. The opportunistic bacteria *B. cepacia* was overgrowing then and became pathogen inside the body of the snake which causing respiratory disorders. Transmissions from humans are hard to predict because there is no data about *Burkholderia cepacia* infection in human or even animal in Bali. Santos *et al.* [6] found that Gram-negative bacilli, like *B. cepacia*, was significantly higher in number in animals with pneumonia than in normal animals.

The successful of treatment in this case study is similar to others [8,9]. Schumacher [8] reported a successful treatment at 3 weeks post treatment. However, unlike the study of [9], this study found that Enrofloxacin is still an effective antimicrobial agent against *Burkholderia cepacia* infection.

CONCLUSION

Burkholderia cepacia was isolated from wild caught captive *Python reticulatus* with respiratory disorders. Combination of treatments using antibiotic (Enrofloxacin), anti-inflammatory drug Meloxicam and vitamin significantly improved the animal respiratory condition. In addition a proper husbandry and hygiene practice will prevent from zoonotic infection.

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