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Non-Invasive Treatment in A Case of Post-Ovulatory Egg Stasis in A Burmese Python (*Python bivittatus*)

(PENANGANAN NON-INVASIF PADA SANCA BODO (Python bivittatus) DENGAN POST-OVULATORY EGG STASIS)

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ABSTRACT

A three-year-old adult female albino gravid *Python bivittatus* was presented with a complaint of egg retention. It laid one slug egg 48 hours earlier and no oviposition noticed after. The python was very restless and was moving a lot in the enclosure. Physical examination and palpation showed a distended cealomic cavity and radiography performed after confirmed post-ovulatory egg stasis. Fluid therapy, calcium gluconate and hormonal therapy was indicated. Two doses of oxytocin were given by intramuscular injection and oviposition was noticed within 24 hours after second therapy.

Keywords: Egg retention; oxytocin; *Python bivittatus*

ABSTRAK

Seekor sanca bodo (*Python bivittatus*) albino betina datang dengan keluhan retensi telur. Sebutir telur infertil telah dikeluarkan 48 jam sebelumnya. Sanca tersebut sangat gelisah dan bergerak terus di dalam kandang. Distensi bagian cealomic dipalpasi pada pemeriksaan klinis dan radiografi meneguhkan *post-ovulatory egg stasis*. Terapi cairan, kalsium gluconat dan terapi hormon telah dilakukan. Dua dosis oksitosin diberikan secara intramuskuler dan sanca berhasil bertelur 24 jam setelah terapi kedua.

Kata-kata kunci: Retensi telur; oksitosin; *Python bivittatus*

INTRODUCTION

Pythons such as the Burmese python (*Python bivittatus*) in albino forms are common reptiles kept as exotic pets in Indonesia. According to Stahl (2006), oviparous snakes kept as pets in captivity are prone to dystocia. Dystocia in oviparous snakes, also known as egg retention or post-ovulatory egg stasis (POES), is a common finding in pythons kept as exotic pets (Stahl, 2006; Knotek, 2015). The reasons for this problem varies from poor physical condition (less muscle tone for egg laying), husbandry related problems and traumatic

injuries during the pre-laying process (Melidone *et al*., 2008), inadequate nesting site and inappropriate thermal environment (DeNardo *et al*., 2000; Sykes, 2010).

The snake in this case study is a three-and-a-half-year-old gravid captive bred female albino *Python bivittatus* weighing 15 kilograms. It was gravid for 3 months and laid an infertile egg two days prior to presentation. No eggs were laid thereafter. Palpation and radiography confirmed the presence of fertile and infertile eggs in the cealomic cavity. The snake was diagnosed with post-ovulatory egg retention and was treated with hormonal and fluid therapy together with proper husbandry. Twelve hours after the second hormonal treatment it laid all the eggs. The aim of this paper is to present a non-invasive method of treating POES in a three year old *Python bivittatus*.

CASE REPORT

Signalement

A three-year-old female albino *Python bivittatus* weighing 15 kilograms. Total body length of 3.5 meters and snout vent length of 3.2 meters.

Anamneses

A pair of *Python bivittatus* was kept together for breeding in an enclosure (length: 2 meters, width: 1 meter, height: 0.6 meters). One infertile egg was present in the enclosure. During the next 48 hours the female snake was restless in its enclosure and did not lay any more eggs.

Clinical Examination

The snake had a normal body condition score and the nostrils were clean. The mucous membrane was a little pale. Coelomic cavity was bulged and the presence of eggs was suspected on palpation.

Radiography

Radiography was performed with the snake on the ventral recumbence. Radiographs showed around 25 eggs of various sizes in the cealomic cavity (Figure 1).

Diagnosis and Prognosis

Based on anamneses, clinical symptoms and radiography, the python was diagnosed with post-ovulatory egg stasis (POES). The prognosis in this case was good (fausta).

Treatment

Treatment included husbandry correction and hormonal treatment. A box big enough for the snake to coil was placed inside the enclosure. Torn paper was placed inside the box. Aggressive fluid therapy (0.9% sodium chloride and lactate ringer solution [1:1]) was administered intracoelomic at 20 ml/kg. Calcium gluconate (100 mg/ml) was diluted with normal saline (1 part calcium gluconate and 1 part sodium chloride 0.9%) and administered subcutaneously with the dose of 50 mg/kg. Three hours later oxytocin (10 IU/ml) was administered by intramuscular injection at the dose of 5 IU/kg. Twelve hours later, a second dose of oxytocin at a dose of 5 IU/kg was administered by intramuscular injection. Oviposition of all 25 eggs happened 12 hours after the second dose of oxytocin.

DISCUSSION

Python bivittatus is one of the largest constrictors kept as exotic pets. Female *Python bivittatus* starts breeding at the age of 2-3-year-old. Males *Python bivittatus* sexually mature earlier than females (Reed and Rodda, 2009). In this case, both male and female python were the appropriate age for breeding.

Dystocia is defined as the inability of the body to give birth normally (Stahl, 2006). Dystocia in reptiles is more common in oviparous snakes (Stahl, 2015; Girolamo and Selleri, 2017). Clinically it is hard to diagnose dystocia/POES, so knowledge of natural species history, diagnosing and treating dystocia is important to understand (DeNardo *et al*., 2000; Sthal, 2015). The cause of POES is often related to inappropriate nest site, improper husbandry and dietary deficiencies (Sykes, 2010; Music and Strunk, 2016).

According to Lock (2000), first-time breeding females are more prone to have POES in captive care and according to Stahl (2006), pythons are more prone to POES in captivity. Post-ovulatory egg stasis in reptiles can be caused by obstructive anatomical or non-obstructive physiological abnormality. Post-ovulatory egg stasis due to obstructive anatomy is caused by abnormal egg shape, necrotic masses, granulomas and neoplasia. Non-obstructive dystocia is caused by inappropriate husbandry, obesity, lack of exercise, and infection (Lock, 2000; Melidone *et al*., 2008; Knotek, 2015). Snakes kept in small enclosures have poor muscle tone which could lead to problems during oviposition (Lock, 2000). Left untreated, eggs could adhere to the wall of the oviduct (Knotek, 2015). The snake on this case study was kept in a small enclosure and occasionally taken out for sunlight during the day.

This may have caused poor muscle tone thus increasing the risk of POES. It also had unpigmented mucous membranes but that may be due to albinism.

Physical examination and radiographic imaging is useful for egg retention diagnosis (Divers, 2006; Stahl, 2006; Melidone *et al*., 2008; Sykes, 2010; Knotek, 2015; Music and Strunk, 2016). A ventrodorsal radiograph (Figure 1) showed 25 eggs with various sizes in the coelomic cavity. In this case, 12 eggs were normal-sized and 13 eggs were smaller than normal. The smaller eggs were considered infertile.

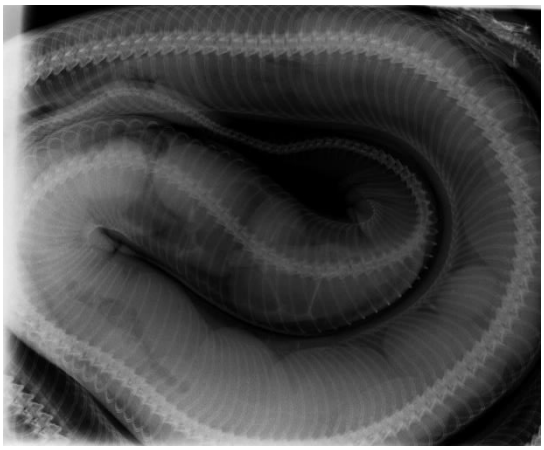

Figure 1. Radiography image of eggs found in the cealomic cavity.

Treatment of POES in snakes include invasive and non-invasive methods such as husbandry correction, hormonal induction, manual egg aspiration through cloaca and surgical treatment (DeNardo *et al.,* 2000; Knotek, 2015). In this case, a non-invasive treatment was preferred considering the short onset of the POES. The snake was treated with husbandry improvement, fluid therapy, calcium gluconate and hormonal (oxytocin) therapy (Girolamo and Selleri, 2017).

Husbandry was improved by placing a nesting box to create a comfortable environment for the snake to lay the eggs. A *Python bivittatus* would lay the eggs in a dark, humid/dry environment (DeNardo *et al*., 2000). Fluid therapy (1 part NaCl 0.9% and 1 part Ringer's solution) was administered to replace the loss of fluids and to re-balance blood electrolytes (Ramsey, 2011). Calcium gluconate was given to address hypocalcemia that is common during egg production in reptiles (Lock, 2000; Jimenez and Divers, 2007).

Oxytocin works best as a treatment for non-obstructive dystocia when it is administered within 48 – 72 hours after oviposition behavior or straining is noticed (Perry,

2014; Girolamo and Selleri, 2017; Giuseppe *et al*., 2017). In this case, oxytocin was administered twice, 12 hours apart. The reason was that no oviposition was observed within 12 hours after the first oxytocin injection. After the second oxytocin injection, the snake laid all eggs within twelve hours. All eggs were removed from the enclosure and fertility was confirmed by candling method. The thirteen eggs that were infertile were disposed and the fertile eggs were placed in an incubator.

CONCLUSION

Early diagnosis of dystocia in snakes can be treated non-invasively by administering fluid therapy, calcium gluconate, and hormonal therapy, as well as by husbandry correction. Prognosis is fausta-dubious when the egg sizes are normal and treatment is started early.

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