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Acariasis on pet Burmese python, *Python molurus bivittatus* in MalaysiaMariana A^{1*}, Vellayan S², Halimatun I¹, Ho TM¹¹Infectious Diseases Research Centre, Institute for Medical Research, 50588 Kuala Lumpur, Malaysia²Faculty of Medicine, Universiti Teknologi MARA, 40450 Shah Alam, Selangor, Malaysia

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ABSTRACT

Objective: To identify the acari present on pet Burmese pythons in Malaysia and to determine whether there is any potential public health risk related to handling of the snakes. **Methods:** Two sub-adult Burmese pythons kept as pets for a period of about 6 to 7 months by different owners, were brought to an exotic animal practice for treatment. On a complete medical examination, some ticks and mites (acari) were detected beneath the dorsal and ventral scales along body length of the snakes. Ticks were directly identified and mites were mounted prior to identification. **Results:** A total of 12 ticks represented by 3 males, 2 females and 7 nymphal stages of *Rhipicephalus sanguineus* (*R. sanguineus*) were extracted from the first python while the other one was with 25 female *Ophionyssus natricis* (*O. natricis*) mesostigmatid mites. Only adult female mites were found. These mites are common ectoparasites of Burmese pythons. **Conclusions:** Both the acarine species found on the Burmese pythons are known vectors of pathogens. This is the first record that *R. sanguineus* has been reported from a pet Burmese python in Malaysia.

1. Introduction

The Burmese python, *Python molurus bivittatus* is the largest subspecies of the Indian python and one of the world's largest snakes[1]. It is native to large tropic and subtropic areas of Southern and Southeast Asia[2]. The pythons are popular as pets due to their large size, attractive colour, gentle disposition and easy-going nature[3]. Supply of the pythons in local pet trade is not known; they might be locally caught or imported. Infestations by ticks and mites (acariasis) on pythons are of concern because some of the acari are known to be vectors of diseases of public health importance[4–6]. Moreover, these acari may cause prurigo and other skin problems in occupationally exposed humans such as pet traders, pet owners and reptile handlers[7–9]. To date, no acari on pet Burmese pythons in Malaysia has been reported. The objective of this report is thus to identify the acari present on pet Burmese pythons in Malaysia and to determine whether there is any potential public health risk related to handling of the snakes.

2. Materials and methods

Two sub-adult Burmese pythons kept as pets for a period

of about 6 to 7 months by different owners were brought to an exotic animal practice for treatment. The pythons were physical examined without being anaesthetised. The pythons were then placed on an examination table with surgical drape. Using magnifying glass, screening for acari was made throughout the whole body length from head to tail with special emphasis in areas underneath and in between scales, groove around the eyes, ears and in the heat pits of the pythons. A soft forcep was used to remove any acari. They were grasped as close as possible to the host skin and extracted with a steady pulling force to ensure the acari mouthparts are intact which is important for identification. All acarines extracted from the pythons were preserved in 70% alcohol. These acarines were then sent to the Unit of Acarology, Institute for Medical Research for identification. Ticks were directly identified while other mites were later mounted for identification. Mesostigmatid mites were first cleared in lactophenol before mounted in Hoyer's medium. Mounted slides were then incubated at 40 °C for a week and cover-slips were ringed with paint to prevent dessication of medium during storage.

3. Results

A total of 12 *Rhipicephalus sanguineus* (*R. sanguineus*) ticks represented by 3 males, 2 females and 7 nymphal stages were extracted beneath the dorsal and ventral scales along body length of the first python. All the ticks were not engorged, and possibly at an early stage of blood feeding. This is the first report on the presence of *R. sanguineus* on a pet Burmese python in Malaysia.

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On the contrary, only mites were extracted from the second python. The mites were identified as 25 females *Ophionyssus natricis* (*O. natricis*). It is surprising to observe only one sex and one life stage of the mites. These mites were probably laid by a same single female because females of *O. natricis* can lay 60 to 80 eggs at a time^[10]. These mites were singly found beneath the scales all over the body.

4. Discussion

Ticks of the genera *Amblyomma* and *Aponomma* are the main ectoparasites of pythons in Malaysia and other parts of the world^[11–17]. The presence of *Rhipicephalus* on a Burmese python in this report is therefore an unusual observation. The species *R. sanguineus* is predominantly a parasite of carnivores in Africa where it probably originated^[18]. Elsewhere, it is almost exclusively a parasite of the domestic dog, with which it has been transported around the world. The species is the most common tick on domestic dogs in Southeast Asia^[19]. It also occasionally attaches on other hosts, including humans^[20]. The interaction between humans and *R. sanguineus* ticks may be more common than it is actually recognized^[21].

There are few possible sources of tick infestation on the python. Firstly, the ticks may have already attached to the python before purchased by the current owner. Secondly, few cases of unintentional or accidental transportation of ticks into a country via imported snakes had been reported^[22–24]. Since the owner has no pet dog and the fact that the snake is always in the house, the source of infestation was suspected from infested dogs or other pets awaiting sale in the pet shop. Transmission of tick infestation between pets in a pet shop is possible if the trader or dealer do not practice good husbandry^[25]. Unfed larval stages of ticks are so tiny that they can be easily overlooked. It is only after some time that they will be noticed when their bodies are partially or fully engorged with blood. It is important to quickly remove the ticks from any pets in the shop to ensure the pets' good health and for the ticks not to spread and infest other animals.

In regards to public health importance, both the acarine species found on the Burmese pythons are known vectors of pathogens. *R. sanguineus* is a known vector of *Babesia canis*^[26], *Ehrlichia canis*^[27] and *Rickettsia conorii*^[28]. Ingestion of *R. sanguineus* eggs is known to cause paralysis in man^[29]. The mite *O. natricis* can transmit *Aeromonas* spp. and also causes Inclusion Body Disease (IBD) in the boid family of snakes. The pathology for disease transmission by the mites is still unknown. A papular vesiculo–bullous eruption of the human skin caused by these mites had been reported^[7]. The presence of these vector species are only an indication of the potential risk for human infection that come into contact with the acari. To establish actual risk, there is a need to determine whether those acari are infected with pathogens. Handlers of Burmese pythons should therefore be advised of the necessary steps to prevent or reduce contact with those acari.

Conflict of interest statement

We declare that we have no conflict of interest.

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