Melioidosis in Captive Slender Tailed Meerkats (Suricata suricatta)

P. Kongmakee1,2, U. Maikaew2, S. Noimoon2, W. Banlunara1*
1 Department of Pathology, Faculty of Veterinary Science, Chulalongkorn University, Bangkok 10330 Thailand
2 Khao Kheow Open Zoo 235 Moo 7 Bangpra, Sriracha Chonburi Thailand
*Corresponding author: wijit.k@chula.ac.th

Keywords: Slender tailed Meerkat, Melioidosis, Burkholderia pseudomallei

Introduction
Melioidosis is a bacterial zoonotic disease caused by Burkholderia pseudomallei which infects various animal species. This organism lives wide spread in environment of the endemic area, especially in soil, wetland and muddy area. In Thailand, the endemic area of this disease shows many reports on melioidosis in human and animal species from different regions of the country. Moreover, not only domestic species are infected in Thailand but captive wild animals and exotic species, such as non-human primates, zebra, deers and kangaroo, are also infected with this pathogen. Laboratory diagnostic pathology, bacterial culture and serology are the most practical methods for B. pseudomallei diagnosis in both clinical and necropsy cases.

Materials and Methods
Eleven slender tailed meerkats (Suricata suricatta) in zoo of Thai eastern region showed clinical signs and got treatment with antibiotics. All animals died between April and July, 2014. During the treatment, serum samples were sent to detect antibodies against B. pseudomallei using indirect hemagglutination test (IHA). All animals were done complete post-mortem examination. All tissue samples were collected in 10% neutral buffer formalin and processed for histopathology. Paraffin blocks were sectioned at 4 µm thickness and stained with hematoxylin and eosin (H&E). Bacterial culture and sensitivity test were done from lung, liver and spleen samples.

Results and Discussion
After the first three animals died in new exhibition area, the rest eight were moved to animal hospital for the treatment, some response to antibiotic but still showed high antibodies titer against B. pseudomallei. After two months of treatment and clinical observation, three animal died during treatment, while five survived animals were moved back to the exhibition area. After one week, one animal died and four out of five animals started to show clinical signs again. All animal were moved back to animal hospital but all died in a month later.

The remarkable gross lesions were severe pulmonary congestion with marked red hepatization (8/11) and multifocal necrotic foci (11/11). Hepatic congestion with diffuse various size of necrotic nodules on hepatic surface and parenchyma. Splenic congestion with a few of cases showed severe necrotic splenitis with caseous material on splenic surface. From histopathology, all cases showed severe multifocal necrotic suppurative pneumonia, hepatitis, splenitis and lymphadenitis with bacterial clumps in necrotic area. Bacterial culture and identification were done from multifocal intra-lesional bacterial clumps. Burkholderia pseudomallei was identified, related with serological diagnosis. In conclusion, Burkholderia pseudomallei, which is an important zoonotic disease, was reported to be the causative agent of the problems.

This report showed fatal melioidosis in captive zoo animals in new exhibition area where sand was used as bedding. It is possible that the sand might be from the moist area or the wetland which is suitable for B. pseudomallei living. Furthermore, the sand might have been de-contaminated inappropriately before use. This report was related to a previous retrospective study on melioidosis in the zoo that showed highest incidence in rainy season. Although the highest mortality rate from melioidosis in the zoo was found in herbivores species which have higher chance to contact the ground than carnivore species. However, B. pseudomallei infection in B. pseudomallei this case can come from pawing and sniffing the ground, which are common behaviors of meerkats, that can be important channel of infection. For disease prevention and control, environmental hygiene is the most important issue that zoo keepers and veterinarians should concern when introducing animals to new area or bring some materials and equipments into protected area.

Acknowledgements
We are grateful staff of Eastern Veterinary Research and diagnosis center and National Institute of Animal Health, Department of Livestock Development for Laboratory diagnostic support.

References