Mucor spp infection in captive Asian Elephant (*Elephas maximus*) in National Elephant Conservation Centre

Azlan Che' Amat[1]*, Mohd Firdaus Ariff Abdul Razak[2] and Siti Khairani Bejo[3]

Case Report

Asian elephant (*Elephas maximus*) in Peninsular Malaysia is still widely distributed in the interior of the country in the following states: Pahang, Perak, Johor, Kelantan, Terengganu, Kedah, and Negeri Sembilan, which probably Pahang has the largest population (Choudhury *et al*., 2008). *Animals in captivity including Asian elephant prone to problems that include poor health*, *repetitive stereotypic behaviour* and *breeding difficulties (*Clubb and Mason, 2003). National Elephant Conservation Centre, Pahang was established by The Department of Wildlife and National Parks (DWNP). The centre is a base for the elephant relocation team. The centre also carries out public awareness activities related to the conservation issues of elephants in Malaysia. It also supports research activities on elephant translocation and conservation. The present paper reports the incidence of *Mucor spp* infection in a 34 year-old female captive Asian elephant in Pahang, Malaysia. It caused a white spot at the hair follicle area on the skin (Figure 1), some area with crusts and some of the fall-off crusty lesion showed volcano-like lesion (Figure 2). The lesion extend from dorsal to lateral part of body bilaterally and upper legs. The elephant had slightly dropped in body condition and appetite as observed by mahout. Deep skin scrapings collected from the affected skin were cultured onto 6.5% Sabouraud Dextrose Agar (SDA) plates. Inoculated plates were incubated at room temperature for 4 days. *Mucor spp* was confirmed by macroscopic observations and pure culture were isolated. The colonies were characterized by the relatively rapid growth of aerial cottony-like mycelia height of several centimetres grayish brown in colour that covered the whole plate in about 4 days (Figure 3).

Mucor is a filamentous fungus found in soil, plants, decaying fruits, vegetables and dung of many herbivorous animals (Michelle, 2010; Bell, 2005). *Mucor spp* may cause infections in man, frogs, amphibians, cattle, and swine (Larone, 1995) and well known for its low virulence and for causing disease only in severely immune compromised humans and animals (Ribes *et al*., 2000). Syndrome of *Mucor spp* infection is called zygomycosis because the ability to invade blood vessel. The syndrome includes cutaneous and rhinocerebral infections, septic arthritis, dialysis-associated peritonitis, renal infections, gastritis and pulmonary infections (Ribes *et al*., 2000; Stringer and Ryan, 2000; Adam *et al*., 1994).

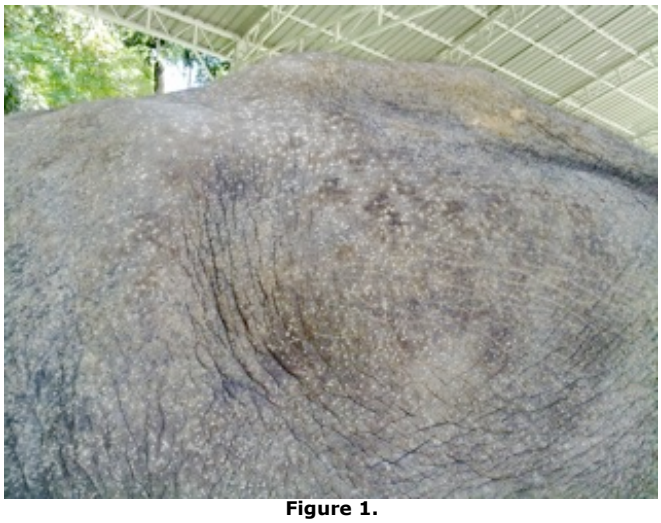

Figure 1.

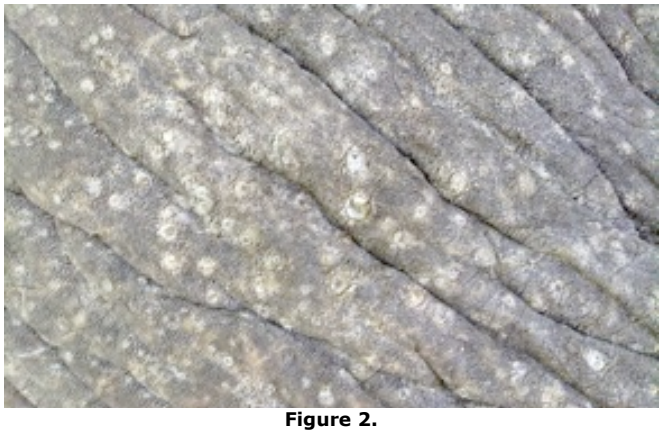

Figure 2.

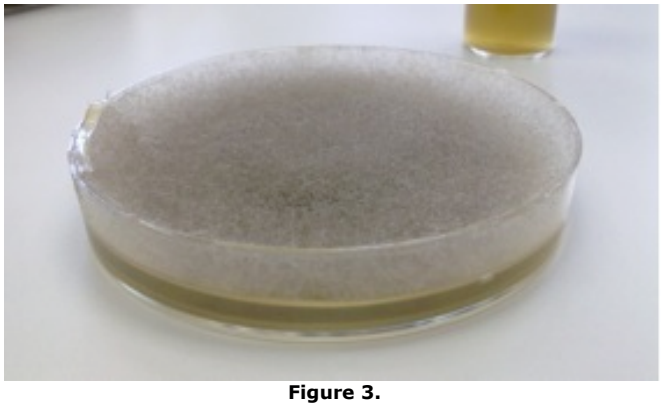

Figure 3.

References

Choudhury, A., Lahiri Choudhury, D.K., Desai, A., Duckworth, J.W., Easa, P.S., Johnsingh, A.J.T., Fernando, P., Hedges, S., Gunawardena, M., Kurt, F., Karanth, U., Lister, A., Menon, V., Riddle, H., Rübel, A. & Wikramanayake, E. (2008). *Elephas maximus*. In: IUCN 2010. IUCN Red List of Threatened Species. Version 2010.4. www.iucnredlist.org.

Clubb, R. and Mason, G. (2003). Animal welfare captivity effects on wide-ranging carnivores. *Nature* 425(6957): 473–474.

Bell A. (2005). An illustrated guide to the *coprophilous Ascomycetes* of Australia.CBS:Biodiversity Series 3. 173 pp.

Michelle, C. (2010). *Mucor sp*. Mold of the Month April 2010. Version 2010. www.qualtestusa.com/files/April_2010_-_Mucor_sp.pdf.

Larone, D. H. (1995). *Medically Important Fungi - A Guide to Identification (3rd ed*). ASM Press, Washington, D.C.

Adam, R. D., Hunger, G., DiTomasso, J. and Comerci, G. Jr. (1994). Mucormycosis: Emerging prominence of cutaneous infections. *Clinical Infection Disease* 19: 67-76.

Ribes J.A., Vanover-Sams C.L., Baker D.J. (2000). Zygomycetes in human disease. *Clinical Microbiology Reviews* 13: 236-301.

Stringer, S. P., and M. W. Ryan. (2000). Chronic invasive fungal rhinosinusitis. Otolaryngol *Clinics of North America* 33: 375-387.

[1] Tutor, Dept. of Vet. Clinical Studies, [3] Associate Prof., Dept. of Vet. Pathology & Microbiology
Faculty of Vet. Medicine, Universiti Putra Malaysia, 43400 Serdang, Selangor, Malaysia. *azlancheamat@gmail.com
[2] Veterinarian, Ex-situ Conservation Div., Dep. of WL & Natural Parks Peninsular Malaysia, KM 10 Jalan Cheras, 56100 Kuala Lumpur, Malaysia.