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Immunological reactive rate to Zika virus in canine sera: A report from a tropical area and concern on pet, zoonosis and reservoir host

Beuy Joob[1]✉, Viroj Wiwanitkit[2]

[1]*Saniation1 Medical Academic Center, Bangkok, Thailand*

[2]*Hainan Medical University, Haikou, Hainan, China*

Dear editor,

Mosquito borne infection is the important group of medical illness that is very common in the tropical countries. Many arboviral diseases are the present global public health threats. In 2016, emerging Zika virus infection becomes a serious problem that needs urgent management. The Zika virus infection is an arboviral infection that has a similar clinical features to dengue [1,2]. However, there is a confirmation that the infection can cause congenital microcephaly [3]. The Zika virus infection is transmittable via *Aedes* mosquito vector bite. Nevertheless, new evidence confirms new mode of transmissions such as sexual transmission and transplacental transmission [4,5]. Another interesting concern on Zika virus transmission is the possibility of zoonosis from pet [6]. In fact, for dengue, it has already been confirmed for the risk of zoonosis from canine reservoir. Here, the authors report observation on this issue.

In this letter, a new finding from a small study on Zika virus IgG positivity rate in canine sera is discussed. The sera in this report is the same set as in the previous study on dengue NS1 antigen positivity rate [7]. Overall 50 randomly collected canine sera from feral dogs were investigated for Zika virus IgG using standard rapid test (BiocanDiagnotics, Canada). According to this report, there is 1 IgG seropositive sample (2%) and this sample is the sample that was confirmed for dengue NS1 negative.

The zoonosis of arbovirus is a great concern. The possibility of occurrence of arbovirus infection in animals, either wild or domestic animals, is the basic consideration for further transmission to human beings [7]. Go *et al.* noted that many arboviruses such as Eastern equine encephalitis virus, Western equine encephalitis virus, Venezuelan equine encephalitis virus, Japanese encephalitis virus and West Nile virus could be the cause of zoonosis [8]. Go *et al.* also proposed that 'most of these viruses were originally found in tropical regions such as Africa and South America or in some regions in Asia' [8], hence, the chance for zoonosis in this area is the important public health concern. Of several animals, pet is mentioned as a possible new reservoir host that can be the source of emerging infection. For dengue, it has just been proposed for this important concern [3]. Dog, a pet that live closely to human beings in several countries, is confirmed for the possibility to get infected by arbovirus especially for dengue. Hence, it is no doubt that dog might be the possible forgotten reservoir host for arbovirus. Since Zika virus is a highly similar infection to dengue, the similar feasibility that dog might be the reservoir host can be expected. Based on this small preliminary study, the observed IgG positivity is very interesting. This might indicate the existence of Zika virus infection in dog and this might be the first case report. In fact, the Zika virus infection in animal is a very interesting topic. It is known that Zika virus is mainly seen in human beings and the infection in non-human primate [9] is possible. However, the new evidences from animal model studies confirm that the infection is observable in mouse [10] and chicken [11] models although the induction of immunosuppression is a pre-requisite. The observation on evidence of infection in non-experimental animal such as dog in this report is very interesting. Nevertheless, the study is only immunological study. Although dengue can be ruled out the possibility that this is a cross reactivity to other viruses cannot be ruled out. Nevertheless, based on this evidence, the concern on pet, zoonosis and reservoir host regarding Zika virus infection is needed.

Conflict of interest statement

We declare that we have no conflict of interest.

✉First and corresponding author: Beuy Joob, Saniation1 Medical Academic Center, Bangkok, Thailand.
E-mail: beuyjoob@hotmail.com
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