ANNALS of Clinical and Translational Neurology
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REPLY TO LETTER

Reply to: Comment on: Zika virus and Guillain–Barré syndrome in Bangladesh

Corine H. GeurtsvanKessel[1,*], Zhahirul Islam[2], Bart C. Jacobs[3] & Hubert P. Endtz[2,4,5]

[1]Department of Viroscience, Erasmus Medical Center, Rotterdam, The Netherlands
[2]Laboratory Sciences and Services Division, International Centre for Diarrhoeal Disease Research, (icddr,b), Dhaka, Bangladesh
[3]Departments of Neurology and Immunology, Erasmus Medical Center, Rotterdam, The Netherlands
[4]Department of Medical Microbiology and Infectious Diseases, Erasmus Medical Center, Rotterdam, The Netherlands
[5]Fondation Mérieux, Lyon, France

***Correspondence**
Corine H. GeurtsvanKessel and Zhahirul Islam, Erasmus MC, Office Na-1018, Wytemaweg 80, 3015 CN Rotterdam, The Netherlands.
Tel: 0031 643271384; Fax: 0031107033441; E-mail: c.geurtsvankessel@erasmusmc.nl; zislam@icddrb.org

Annals of Clinical and Translational Neurology **2018; 5(9): 1140–1141**

doi: 10.1002/acn3.619

Dear Editor,

We thank Drs Rodríguez and Anaya for their interest in our publication.[1] We agree that the situation in Bangladesh[2] seems to differ from the context of the ZIKV outbreaks in the Pacific Islands and Latin America.[3] The introduction of ZIKV did not cause an apparent epidemic or increase the incidence of acute flaccid paralysis GBS in Bangladesh. The only PCR-confirmed ZIKV infection in Bangladesh was reported in 2014.[4] We provided the first data on the seroprevalence of ZIKV-neutralizing antibodies in Bangladesh (0–13.2%). Although our study was conducted during the period when ZIKV spread from Asia and Africa to the Pacific islands and Latin America, no ZIKV-related disease outbreaks were reported in Bangladesh. Thus, it appears that the introduction and circulation of ZIKV is not necessarily followed by an increase in GBS. The determinants driving the emergence of ZIKV-related GBS are yet unknown.

Previous infections are implicated in the immune defense alterations and pathogenesis of ZIKV-related diseases. Co-infections may influence the risk of GBS after ZIKV infection, though there is currently no evidence to support this hypothesis. Conceivably, in patients with two recent infections, only one microorganism or virus may have triggered GBS; this is most likely in areas with epidemic infections. Therefore, it is important to assess known GBS-associated infections before attributing a case to a specific novel infection like ZIKV. We therefore investigated the antibody responses to *Campylobacter jejuni*, the predominant preceding infection in GBS worldwide.[5] GBS following *C. jejuni* is predominantly axonal, while GBS after ZIKV is usually demyelinating (except in a report from French-Polynesia[6]). Strikingly, all patients in our study with positive serology for both recent *C. jejuni* and ZIKV infections developed the axonal subtype. These findings emphasize the importance of differentiating ZIKV with other infections related to GBS, including *C. jejuni*, *Mycoplasma pneumoniae* and other related (viral) infections.

C. jejuni infections are associated with specific clinical subtypes of GBS, including pure motor forms. Also in this study, we found an association between *C. jejuni* and pure motor GBS. In contrast, patients with ZIKV infection and no evidence of *C. jejuni* infection more frequently presented with concomitant sensory and autonomic dysfunction, though the groups were too small to make strong conclusions. Extensive large-cohort studies are required to establish the clinical variants of ZIKV-associated GBS; such studies will improve our understanding of pathogenesis and assist clinical decision-making. Given the rarity of ZIKV-associated GBS, these questions will require international collaboration.

Conflict of Interest

No conflicts of interest.

References

1. Rodriguez Y, Anaya J-M. Comment on: zika virus and Guillain–Barré syndrome in Bangladesh. Ann Clin Transl Neurol 2018. In press (ACN3-2018-05-0097-LT)
2. GeurtsvanKessel CH, Islam Z, Islam MB, et al. Zika virus and Guillain-Barre syndrome in Bangladesh. Ann Clin Transl Neurol 2018;5:606–615.
3. Dos Santos T, Rodriguez A, Almiron M, et al. Zika Virus and the Guillain-Barre Syndrome - Case Series from Seven Countries. N Engl J Med 2016;375:1598–1601.

4. Muraduzzaman AKM, Sultana S, Shirin T, et al. Introduction of Zika virus in Bangladesh: an impending public health threat. Asian Pac J Trop Med 2017;10: 925–928.
5. Jacobs BC, Rothbarth PH, van der Meche FG, et al. The spectrum of antecedent infections in Guillain-Barre syndrome: a case-control study. Neurology 1998;51: 1110–1115.
6. Cao-Lormeau VM, Blake A, Mons S, et al. Guillain-Barre Syndrome outbreak associated with Zika virus infection in French Polynesia: a case-control study. Lancet 2016;387:1531–1539.

