

TITLE: PREVALENCE AND TITERS OF ZIKA VIRUS NEUTRALIZING ANTIBODIES IN ADULTS WITH CLINICAL HISTORY OF INFECTION FROM MACEIÓ CITY, ALAGOAS STATE

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ABSTRACT:

Zika virus (ZIKV) is a mosquito-borne *Flavivirus* (family *Flaviviridae*) that is endemic in Brazil since 2015. Human ZIKV infections are asymptomatic in most of the cases. Also, Zika can be misdiagnosed during the acute infection due high illness similarity to those caused by other arboviruses. The discrimination between Zika and Dengue is especially complicated in order to high degree of cross-reactivity in commercial serological tests. In general, plaque reduction neutralization test (PRNT) is a very sensitive and specific serological method for viral diagnosis. Our aim was to detect specie-specific neutralizing antibodies against ZIKV in sera samples from voluntaries with clinical history of this infection, using a 90% neutralization test to ZIKV, PRNT/90. We included 10 healthy persons aged ≥ 18 years who had history of Zika infection, occurred between 2016 and 2018. Neutralization tests were performed in Vero E6 cell monolayers at 70% confluency infected with a mix of ZIKV (50-100 PFU of ZIKV078 strain, P4) plus 2-fold dilutions of the heat-inactivated test sera, incubated at 37°C for 1 hour and covered with carboxymethylcellulose overlay followed by incubation at 37°C for 5 days. Furthermore, the samples were screened for IgM/IgG to ZIKV by rapid test. Four samples achieved 90% neutralization of viral infection with antibody titers ranging from 8 to 128. Two other samples reduced viral infection between 70 and 87% with titers 4. These six PRNT positive samples showed only anti-ZIKV IgG in the rapid test. Of these, five had anti-Dengue IgG antibodies, tested by indirect EIA, suggesting secondary flavivirus infections by ZIKV. However, plasma containing antibodies to Dengue virus substantially cross-reacted with ZIKV, as previously shown in other studies. Therefore, we cannot rule out the possibility that the PRNT test for Zika has also detected anti-dengue cross-reactivity antibodies. Otherwise, among 10 samples tested 4 were negative to anti-ZIKV antibodies, despite of the illness history of these patients. This data suggests that other arbovirus infections were misdiagnosed as Zika. Our results reinforce that co-circulation of ZIKV and DENV have made their diagnoses a big challenge for public health professionals in Alagoas state and in other regions where the circulation of these viruses are overlapped.

Keywords: neutralizing antibodies, ZIKA, PRNT90.

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