



The Brazilian Journal of INFECTIOUS DISEASES

www.elsevier.com/locate/bjid



Letter to the Editor

Serological survey of Chikungunya virus in Ilorin Metropolis, Nigeria



Dear Editor,

Chikungunya virus (CHIKV) is a mosquito borne Alphavirus which has emerged and reemerged. Symptoms of Chikungunya virus infection and malaria parasite infection are almost indistinguishable and cases of misdiagnosis are not uncommon. In Nigeria and most developing countries, malaria or typhoid is usually ascribed to patients with febrile clinical manifestations¹ unless otherwise confirmed by laboratory testing to assess for arboviral infection. The latter is not always so, especially in the Nigeria healthcare system. The seroprevalence of Chikungunya virus within Ilorin metropolis has not been reported. This study therefore investigates the seroprevalence of this infection as well as its associated risk factors.

A cross-sectional study of febrile subjects within Ilorin metropolis was conducted using a multistage sampling technique. A total of 176 febrile subjects attending major hospitals within Ilorin East and Ilorin South Local Government were recruited. Infants (<1 year old) were excluded from the survey. Standardized close ended questionnaires were administered to collect data on demographics, symptoms, and mosquito control measures of subjects. Blood samples were collected and the sera were tested for CHIKV IgG using ELISA as described by Sergon et al.² Subject exposed to CHIKV infection was defined as any subject with IgG antibodies to CHIKV

infection in serum. Real Time Quantitative Polymerase Chain Reaction (RT-qPCR) using already published³ CHIKV primers was performed to confirm the presence of CHIKV RNA in 13 ELISA positive sera samples with higher optical densities. Ethical approval was obtained from the Ethical Review Committee (ERC) of Kwara State Ministry of Health. In addition, informed consent was obtained from the subjects. The data generated were analyzed using Microsoft Excel 2007 and SPSS version 21.

Out of 176 subjects tested for anti-Chikungunya IgG antibodies, 23 (13%) were seropositive. This low seroprevalence could imply a minimal circulation of the virus in the area. It contradicts the report of Baba et al.¹ that recorded a higher (55%) prevalence in Maiduguri, North Eastern Nigeria. Age was significantly associated to Chikungunya virus acquisition (**Table 1**). Age group 1–10 [6 (3.4%)] had the highest seropositivity while subjects older than 70 years were the least (**Table 1**). The presence of CHIKV RNA was confirmed in 10 out of 13 IgG ELISA seropositive cases following RT-qPCR.

This study established the exposure of subjects within Ilorin metropolis to Chikungunya virus, which suggests that the virus may be in circulation among the study population. Proper diagnostic measures and adequate vector control scheme should therefore be put in place to monitor and reduce the associated morbidity of the disease.

Table 1 – Seroprevalence of anti-Chikungunya virus IgG antibody of subjects in relation to socio-demographic and predisposing factors.

| Parameter | IgG positive (%) | IgG negative (%) | p-value | X ² value | 95% CI |
|----------------------------|------------------|------------------|---------|----------------------|----------------|
| <i>Age</i> | | | | | |
| 1–10 | 6 (3.4) | 7 (4.0) | 0.017 | 80.675 | 1.0–4.7 |
| 11–20 | 3 (1.7) | 20 (11.4) | | | |
| 21–30 | 5 (2.8) | 45 (25.6) | | | |
| 31–40 | 5 (2.8) | 44 (25) | | | |
| 41–50 | 1 (0.6) | 23 (13.1) | | | |
| 51–60 | 1 (0.6) | 10 (5.7) | | | |
| 61–70 | 2 (1.1) | 2 (1.1) | | | |
| >70 | 0 (0) | 2 (1.1) | | | |
| <i>Sex</i> | | | | | |
| Male | 10 (5.7) | 71 (40.3) | 0.793 | 0.069 | –7.6 to 4.7 |
| Female | 13 (7.4) | 82 (46.6) | | | |
| <i>Marital status</i> | | | | | |
| Married | 11 (6.3) | 99 (56.3) | 0.119 | 2.431 | 5.14 to 17.85 |
| Single | 12 (6.8) | 54 (30.7) | | | |
| <i>Occupation</i> | | | | | |
| Farming | 1 (0.6) | 16 (9.1) | 0.257 | 4.041 | –0.26 to 11.8 |
| Civil servant | 7 (4.0) | 50 (28.4) | | | |
| Business | 5 (2.8) | 49 (27.8) | | | |
| Student | 10 (5.7) | 38 (21.6) | | | |
| <i>Level of education</i> | | | | | |
| No education | 3 (1.7) | 6 (3.4) | 0.150 | 5.316 | –1.0 to 12.5 |
| Primary | 5 (2.8) | 22 (12.5) | | | |
| Secondary | 3 (1.7) | 39 (22.2) | | | |
| Tertiary | 12 (6.8) | 86 (48.9) | | | |
| <i>Use of mosquito net</i> | | | | | |
| Yes | 3 (1.7) | 49 (27.8) | 0.063 | 3.461 | –96.5 to 119.5 |
| No | 20 (11.4) | 104 (59.1) | | | |
| <i>Use of insecticides</i> | | | | | |
| Yes | 18 (10.2) | 105 (59.7) | 0.348 | 0.882 | –71.1 to 94.1 |
| No | 5 (2.8) | 48 (27.3) | | | |

X², Chi square; CI, confidence interval; p < 0.05, statistical significance at 95% confidence interval.

Conflicts of interest

The authors declare no conflicts of interest.

REFERENCES

- Baba M, Logue CH, Oderinde B, et al. Evidence of arbovirus co-infection in suspected febrile malaria and typhoid patients in Nigeria. *J Infect Dev Ctries.* 2013;7:51–9.
- Sergon K, Yahaya AA, Brown J, et al. Seroprevalence of Chikungunya virus infection on Grande Comore Island of the Comoros: 2005. *Am J Trop Med Hyg.* 2007;76:1189–93.
- Dayakar S, Goud IK, Pillai H, et al. Molecular diagnosis of Chikungunya virus (CHIKV) and Dengue virus (DENV) and its concomitant circulation in South Indian population. *Virology.* 2015;5:56–62.

Olatunji Matthew Kolawole*, Kizito Eneye Bello, Adetola Adebimpe Seriki, Ahmad Adebayo Irekeola
 University of Ilorin, Faculty of Life Sciences, Infectious Diseases and Environmental Health Research Group, Department of Microbiology, Ilorin, Nigeria

* Corresponding author.

E-mail address: tomak7475@gmail.com (O.M. Kolawole).

Received 1 December 2016

Accepted 16 December 2016

Available online 23 February 2017

1413-8670/

© 2017 Sociedade Brasileira de Infectologia. Published by Elsevier Editora Ltda. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

<http://dx.doi.org/10.1016/j.bjid.2016.12.007>