

A Matched Case-Control Study to Asses the Association of Chikungunya Severity among Blood Groups and Other Determinants in Tesseney, Gash Barka Zone, Eritrea

Authors : Ghirmay Teklemicheal, Samsom Mehari, Sara Tesfay

Abstract : Objectives: A total of 1074 suspected chikungunya cases were reported in Tesseney Province, Gash Barka region, Eritrea, during an outbreak. This study was aimed to assess the possible association of chikungunya severity among ABO blood groups and other potential determinants. Methods: A sex-matched and age-matched case-control study was conducted during the outbreak. For each case, one control subject had been selected from the mild Chikungunya cases. Along the same line of argument, a second control subject had also been designated through which neighborhood of cases were analyzed, scrutinized, and appeared to the scheme of comparison. Time is always the most sacrosanct element in pursuance of any study. According to the temporal calculation, this study was pursued from October 15, 2018, to November 15, 2018. Coming to the methodological dependability, calculating odds ratios (ORs) and conditional (fixed-effect) logistic regression methods were being applied. As a consequence of this, the data was analyzed and construed on the basis of the aforementioned methodological systems. Results: In this outbreak, 137 severe suspected chikungunya cases and 137 mild chikungunya suspected patients, and 137 controls free of chikungunya from the neighborhood of cases were analyzed. Non-O individuals compared to those with O blood group indicated as significant with a p-value of 0.002. Separate blood group comparison among A and O blood groups reflected as significant with a p-value of 0.002. However, there was no significant difference in the severity of chikungunya among B, AB, and O blood groups with a p-value of 0.113 and 0.708, respectively, and a strong association of chikungunya severity was found with hypertension and diabetes (p-value of < 0.0001); whereas, there was no association between chikungunya severity and asthma with a p-value of 0.695 and also no association with pregnancy (p-value = 0.881), ventilator (p-value = 0.181), air conditioner (p-value = 0.247), and didn't use latrine and pit latrine (p-value = 0.318), among individuals using septic and pit latrine (p-value = 0.567) and also among individuals using flush and pit latrine (p-value = 0.194). Conclusions: Non- O blood groups were found to be at risk more than their counterpart O blood group individuals with severe form of chikungunya disease. By the same token, individuals with chronic disease were more prone to severe forms of the disease in comparison with individuals without chronic disease. Prioritization is recommended for patients with chronic diseases and non-O blood group since they are found to be susceptible to severe chikungunya disease. Identification of human cell surface receptor(s) for CHIKV is quite necessary for further understanding of its pathophysiology in humans. Therefore, molecular and functional studies will necessarily be helpful in disclosing the association of blood group antigens and CHIKV infections.

Keywords : Chikungunya, Chikungunya virus, disease outbreaks, case-control studies, Eritrea

Conference Title : ICBHDRPHR 2021 : International Conference on Bridging the Health Divide: The Rural Public Health Research

Conference Location : London, United Kingdom

Conference Dates : March 15-16, 2021