A MATCHED CASE-CONTROL STUDY TO ASSES THE ASSOCIATION OF CHIKUNGUYNYA SEVERITY AMONG BLOOD GROUPS AND OTHER DETERMINANTS IN TESSENEY, GASH BARKA ZONE, ERITREA.

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 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 *p value* of 0.002. Separate blood group comparison among A and O blood group reflected as significant with *p value* of 0.002. However, there was no significant difference in severity of chikungunya among B, AB and O blood groups with *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 *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 form 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.