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Prevalence of transfusion transmissible infection types and their ABO and rhesus blood group distribution

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Background: Transfusion-transmissible infectious agents such as hepatitis B virus (HBV), human immunodeficiency virus (HIV), hepatitis C virus (HCV) and syphilis are among the greatest threats to blood safety for transfusion recipients and pose a serious public health problem. This cross-sectional study was undertaken with the aim of determining the seroprevalence of HIV, HCV, hepatitis B surface antigen (HBsAg) and syphilis and correlating the findings with ABO and Rhesus Blood group distribution as it has been documented.

Method: The presence of antibodies to HIV, HBV, HCV and syphillis were detected in the serum of donors using dipstick technology and blood group testing using anti-A, anti-B, anti-AB, and anti-D antisera using the tile method was conducted. Enzyme Linked Immunosorbent Assay protocols were also conducted to determine TTI antibodies.

Result: A total of 8,171 apparently healthy blood donors who presented for blood donation at the University College Hospital Blood Bank, Ibadan between March 2011 and February 2012 were studied. 565 donors (6.91%) tested positive by ELISA to the TTIs including HIV, HBsAg, HCV, and Syphilis. A population of 143 donors had HIV (1.75%), 196 donors had HCV (2.39%), 167 donors had HBsAg (2.04%) and 59 donors had syphilis (0.72%). This shows a moderate prevalence of TTIs in Ibadan with HCV being the highest prevalent and syphilis being the lowest. Rhesus blood group distribution showed that Rhesus positive individuals were more than the negative individuals and this is in agreement with normal population distribution (Rhesus 'D' positive 93.35% and Rhesus 'D' negative 6.65%). Blood group distribution among these infected donors particularly those infected with HIV and Syphilis followed the normal population distribution in this order, O>A>B>AB. However, blood group distribution in HBsAg and HCV did not follow the normal population distribution as blood group B was more than blood group A. Statistical analysis using Chi square and Pearson correlation showed that this difference is significant and there is a positive correlation between HBsAg and HCV with blood group B.

Discussion: This therefore suggests that, blood group B individuals are more susceptible to both HBsAg and HCV. However, this study is open to further study to determine the cause of susceptibility whether it is in the structure of the B antigen, presence or absence of some receptors or genetic constituent of the antigen or the structure of HIV and HCV and to know if there's a possible genetic link between inheritance of blood groups and natural defense mechanism against infection. The knowledge obtained will also enable blood group B individuals to take special precautions against these infections by living a safe lifestyle i.e., Hepatitis C virus and Human Immunodeficiency Virus infections.

Biography

Lala O K is a Biomedical Scientist at the University College Hospital, Ibadan. He is a member of the European Haematology Association and has publications in several books.

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