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Altered avidity to α and β antigenic reactions induced by malaria parasitaemia Nigerian subjects

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Plasmodium falciparum infected erythrocytes have been reported to display several dramatic morphological changes that affect membrane integrity such as rigidity, antigenic character and permeability. These modifications occur both at the erythrocyte cytoskeleton and extracellular surface of the membrane resulting in sub-cellular modifications of adhesive properties exhibited by the affected cells. It is plausible therefore to hypothesize possible alterations of blood group antigenic reactivity during the infection process that could cause danger in serological procedures. Our objective therefore was to ascertain the possible changes in the reactivity of α and β antigens to their corresponding antibodies in parasitized erythrocytes. A total of 200 blood samples comprising of 50 each from parasitemic subjects of blood groups A and B respectively. They were compared with 50 samples each from control subjects from corresponding blood groups respectively who tested negative for plasmodiasis. Confirmatory tests for malaria parasites were done by two algorithms of microscopy and rapid diagnostic tests. Standard tile and tube methods were used for direct and reverse blood grouping techniques with washed and unwashed red cells while time taken for agglutination reactions to take place was recorded as a score of avidity of the antibodies used on the red cell antigens. We recorded a significantly reduced reaction times in malaria parasitized red cells compared with non-parasitized controls in both blood groups A and B ($P < 0.05$, respectively). Also, there were statistically reduced reaction times in unwashed cells compared with washed cells in both test and control erythrocytes ($P < 0.05$, respectively). The reaction times using sera from subjects and controls on standard cells during reverse grouping were equally affected. We hereby conclude that, irrespective of density of parasitemia, reaction times of α and β antigens with their corresponding antibodies are reduced significantly. This could lead to errors in serological interpretations with malaria infected red cells especially during emergency cross match and with less avid sera. The continuous use of washed red cells for serological procedures is equally re-emphasized.

Biography

Chinedu Kingsley Dike holds a Bachelor's degree in Medical Laboratory Science with a bias in Clinical Chemistry. He is currently pursuing Post-graduate degree in Medical Laboratory Science. His main research interest is immunological studies of hemoparasites.

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