

14th World Congress on

GENERAL PEDIATRICS & ADOLESCENT MEDICINE

September 25-27, 2017 Chicago, USA

High IgG1 malaria antibodies level in children is a possible risk factor of black water fever: Case-control study

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Background: Pathogenesis of acute massive intravascular hemolysis in blackwater fever is very complex. Mostly, malaria immunity deficiency in expatriates, Quinine and Plasmodium are incriminated. The role of malaria IgG1 antibodies in BWF in older children supposed to have malaria protective immunity is not well elucidated. This study aimed to determine the profile of malaria IgG1 for malaria crude antigen in children developing blackwater fever compared to patients with uncomplicated malaria

Methodology: This is a case-control study conducted in 4 medical institutions across Kinshasa. Cases were patients with blackwater fever (BWF) whereas controls had uncomplicated Plasmodium falciparum malaria (UM). For each case, 2 controls were recruited and were matched for age, sex and the area of residence. Malaria IgG1 were assessed by standard ELISA and absorbance measured in an automated plate reader.

Results: The level of antibodies in BWF children were very high compared to uncomplicated malaria [1.95mg/l (IC95%:1.55–2.44) versus [1.19 mg/l (IC95%: 0.98–1.43)] and $p=0,002$. The majority of BWF cases (81,4%) were above 5 years old while only 18,6% were under 5 years old: OR: 1.33 (0.53–3.32). Quinine was used by 95.3% of the BWF cases [OR: 50.19 (10.75–234.42)] $p<0.001$ versus uncomplicated malaria. There was no linear correlation between age of patients and the logarithm of antibodies. R^2 is totally null ($p=0.335$).

Conclusion: Malaria IgG1 antibodies is high in children with BWF, and should be involved in the pathogenesis of the disease, probably by activating complement system via classical pathway and leading to acute massive hemolysis. No correlation was observed between increasing of antibodies and age of patients.

Biography

Joseph M Bodi is a researcher at the Kinshasa University in Democratic Republic of Congo.

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