

A potent candidate black water fever malaria vaccine in the offing, Ugandan case

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Introduction: Black Water Fever Malaria, an acute haemolytic disease syndrome, associated with *Plasmodium falciparum* infection, occurring only in non-immune children and adults could, be a disorder of the Zinc finger gene and tumour necrosis factor alfa. It is characterized by haemoglobinuria, fever, jaundice and anaemia. We now report that their immunity can be boosted with a combination of antihistamine and zinc sulphate to the effect of preventing further malaria attack for over a year.

Case History: 120 children aged three months to twelve years, were followed for haemoglobinuria without a known haemoglobinopathy, with symptoms of fever, vomiting, abdominal pain, passage of dark red urine, and loose stools, epistaxis and body weakness, after treatment with chlorpheniramine and zinc sulphate in addition to anti-malarials. There was a positive family history of leprosy one case and congenital malformations, ranging from cervico-facial-ano genital sinuses and tags, in 96 cases, polydactyly, in one case, to Einhoms disease, in one case and or dactylitis, in one case. Physical examination revealed fever, pallor, jaundice, dehydration, renal angle tenderness, hepatosplenomegaly and congestive cardiac failure in all of them.

Method: Blood and urine samples were taken for examination. Abdominal ultrasonography was requested for.

Result and Treatment: Full Haemogramme showed low haemoglobin, suggestive of severe anaemia, monocytosis, high total white and low red blood cell counts; positive rapid test for *plasmodium falciparum* and unspecified mixed species of *plasmodium*, and random blood glucose of varying degrees of hypoglycaemia. Urinalysis report revealed a positive Haem -test without the presence of red blood cells. Renal parenchymal disease was detected on ultrasonography in all of them. Black water fever malaria with severe anaemia and congenital pre-auricular sinus with renal disorder was diagnosed.

In addition to general and specific care,

- Oral chlorpheniramine, 0.35mg/kg/day in three divided doses for five days, and
- Oral Zinkid (zincsulphate), 0.4mg/kg twice daily for 14 days, were administered

They were discharged between November 2012 and April 2013, and 114 of them have not had recurrence of the disease to date with exception of six, four of whom turned up at 8 months of follow up, nine at 9 months, and the other, at 10 months, with Black water Fever Malaria syndrome.

Conclusion: Black water fever Malaria syndrome patients developed ample immunity to the disease to the extent of protecting 95% of them for more than a year against Malaria.

Discussion:

- How does combination of antihistamine and or zinc-sulphate, modulate host immune response to black water fever malaria?
- Is tumour necrosis factor alpha, the crucial cytokine in the pathogenesis of black water fever malaria and other haemorrhagic fevers like Ebola?
- Is the occurrence of congenital pre-auricular sinuses a determinant of black water fever?
- How can we use this knowledge for the development of a potent candidate malaria vaccine?

Biography

Akusa Darlington is a 1996 graduate of Makerere University in Uganda, with MBChB degree. He served as the zonal coordinator for National Malaria Control Programme from 1999 to 2002. He has published in reputable journals and presented papers at national conferences. He is currently leading a team of health workers investigating an outbreak of Black Water Fever Malaria in North Western Uganda, based in Arua Regional Referral Hospital, in Uganda.

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