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Malaria parasitaemia in children aged 1-5 years in Aba, South Eastern Nigeria

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Background: Malaria has become a threat to health in the tropical and other developing countries. No wonder this has become one of the components of the Millennium Development Goals (MDGs). Malaria accounts for one in five of all childhood deaths in Africa. Yet much of the impact of this disease on the world's children could be prevented with currently available interventions.

Methods & Materials: This study was carried out in Aba, Abia State, Nigeria between the months of July and October, 2012. Three hundred patients were tested using thick film method for the presence of malaria parasites. A pre-tested structural questionnaire was used to obtain the demographic data and home management practices from parents of the children.

Results: Out of 300 children sampled, 195 (65.0%) were infected with malaria parasites. Ninety seven (62.2%) of those infected were males, while 98 (68.1%) were females. However, the prevalence rate of infection among the males and females were statistically insignificant (*P-value* < 0.05). Children of age five had the highest prevalence of 73.8%, followed by the children of age two with prevalence rate of 68.0%. Children living in homes where preventive measures were adopted recorded lower rate of infection. Those using insecticide treated nets (ITNs) had the lowest rate of infection (23.1%). This is followed by those using combined window/door net plus insecticide sprays (45.5%), while the homes where no control measures were adopted recorded 92.7% rate of infection.

Conclusion: The difference in prevalence rates among homes using different control measures were statistically significant (*P-value* > 0.05) and therefore malaria infection is dependent on the control measures adopted.

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Controversial role of leishmania RNA virus as a determinant of pathogenicity in human leishmaniasis

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Background: American tegumentary leishmaniasis (ATL) is a neglected disease of South America where metastatic mucosal lesions (ML) can be seen in up to 5-20% of *Leishmania Viannia* complex infections. The *Leishmania* RNA virus-1 (LRV1) has been recently implicated as a possible pathogenic agent in ATL since disseminated disease (DisL) was induced by high LRV1-expressing amastigotes in an animal model, and human cases of DisL have been reportedly infected with LRV1-containing *Leishmania* parasites. None of these studies clearly supported its role in human disease.

Methods & Materials: Fifty-six subjects with parasitologically confirmed ATL were clinically and parasitologically assessed. Lesion biopsy specimens were processed for detection and quantification of *Leishmania (Viannia)* DNA by a quantitative real-time PCR (qPCR) assay targeting kinetoplast DNA (kDNA) minicircles. *Leishmania (Viannia)* species were identified by PCR targeting the *mpi* gene and PCR-RFLP assays targeting *cpb* and *hsp70* genes. LRV1 RNA detection was performed using reverse transcription (RT)-qPCR targeting conserved viral sequences.

Results: Subjects were clinically classified as follows: a) Localized cutaneous leishmaniasis (LCL, 42.9%), b) ML (n = 28, 50%), and c) DisL (n = 4, 7.1%). Strain identification by clinical category was: a) LCL: *L. (V.) braziliensis* (56%) and *L. (V.) guyanensis* (31.3%), b) ML: *L. (V.) braziliensis* (60%) and *L. (V.) peruviana* (40%), and c) DisL: *L. (V.) guyanensis*. Rate of LRV1 detection was 7.1% in ML (2/28), 8.3% in LCL (2/24) and 50% in DisL (2/4). Considering DisL and ML as metastatic disease (MD) and LCL as non-metastatic disease (nMD), the rate of LRV1 detection was 8.3% in nMD and 12,5% in MD (p = 1.0). Even though detection of LRV1 was higher in DisL, an important co-morbidity was detected in those patients: HIV infection, subclinical TB infection, and disseminated mycobacterial disease. Parasite load in MD and nMD was comparable (37.8 vs. 86.4 parasites per 10^6 human cells, p = 0.52). There were no clinical or parasitological differences between parasite infected and non-infected by LRV1.

Conclusion: Our findings do not resemble those reported in animal models. LRV1 may be a conditional contributor to metastatic

spread of ATL, but we were unable to extrapolate findings from animal models to human disease.

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High under-five case fatality rate in the recent malaria upsurge in Muleba, Tanzania

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Background: Muleba is one of the malaria sentinel sites in a country. It is known to have several malaria outbreaks. The first outbreak occurred in 1997 with a case fatality ratio (CFR) of 3.7% and the second was in 2006, with CFR of 2.8%. On the 1st of June 2013, the Ministry received report of 123 cases with CFR of 7.3%, an increase in the number of admitted < 5 malaria cases from Muleba district. Tanzania FELTP conducted an investigation to confirm the existence of the outbreak, determine attributing factors and institute control measures.

Methods & Materials: We reviewed the weekly line list and medical records of admitted patients from the 1st epidemiology week of calendar year 2013 and interviewed 302 admitted fever-patients, parent, or care taker on bed net ownership and usage. Data was abstracted using a structured data collection check list. A total of 38 samples were taken for further investigations to rule out borrelia, yellow fever and dengue viral infection. Data was analysed using Microsoft Excel and Epi Info version 3.5.4

Results: From 9th – 23rd Epidemiology week, there were a total of 2,366 cases and 131 deaths (CFR = 5.5%); 86 (65.6%) due to malaria with majority 71 (82.6%) being < 5.

A total of 302 fever admitted cases were interviewed; out of 184 tested for malaria, 149 (81%) were positive. Majority 258 (85.4%) came from villages that were uncovered by Indoor Residual Spraying (IRS) intervention. About 179 (59.3%) reported to own mosquito bed nets. Majority 233 (77.2%) delayed seeking medical care and sought traditional herbs.

Of the 38 blood samples taken for analysis at the National Laboratory (NHL-QATC), 21 (55.3%) tested positive for malaria and all were negative for borrelia, dengue and yellow fever.

Conclusion: An outbreak ofmalaria was confirmed. Factors contributing to high CFR included late medical seeking behaviour, use of traditional herbs at home, poor bed net usage and lack of IRS intervention activities. There is a need to sensitize communities on early medical seeking behaviour and revitalizing other malaria control initiatives like IRS. Other causes of fever other than malaria should also be explored.

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Comparison of highland malaria in Burundi, Rwanda and Kenyan community health care centres

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Background: Highland (HL) malaria represents less than 5% of all malaria cases in Sub-Saharan Africa. Most of them however, are "imported" by local travel upcountry - from malaria endemic areas to mountains by visitors and local travellers. The "true" HL malaria in altitude higher than 2000 meters above sea (m.a.s.) level is rare. The aim of this communication is to compare proportion of malaria admissions in 3 community health care centres located in altitude above 2000 m a.s. and their clinical outcomes in Kenyan, Burundian and Rwanda.

Methods & Materials: Within last 3 years (2010,2011,2012) number of admissions in all 3 CHS (Bigugu, Rutowu, Eldoret) was similar with 8540 – 10 155 patients per centre per year. Malaria diagnosis was made microscopically (according to WHO guidelines) and was confirmed with rapid diagnostic test (RDT; according to manufacturer's instructions). Prortion of malaria cases was compared in all 3 centres located in 2250 m.a.s. (Bigugu), 2000 m.a.s. (Rutowu) and 2100 m.a.s. (Eldoret), respectively.

Results: Proportion of "true" HL malaria that means in those without travel history to down-land within last 2 months was correlating with altitude. It was lowest was in Bigugu (1,8%) in comparison to Eldoret (3,1%) and Rutowu (4,1%), however, the differences were not significant. Only cases with clinical symptoms, microscopically and RTD positive have been assessed. Concerning other infectious diseases in the centres, respiratory tract infections were responsible for 42-64% of all visits, and highest proportion correlated with altitude and was in Bigugu (Rwanda, 2250 m.a.s.).

Conclusion: Lowest proportion of HL malaria was in centre in Bigugu, Rwanda, which is located in highest altitude - 2250 m.a.s.