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Mosquito-borne Disease: A Review of the Possible Synergism between Arboviral Infection and Plasmodium Infection in West Africa, Nigeria

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Background: Mosquitoes are the most prevalent insect vectors in sub-Saharan Africa. These vectors are the leading cause of acute febrile infections within these regions and also a reservoir for many other microorganisms. This led to misdiagnosis and comorbidity with other diseases like Zika virus, Dengue fever, and Japanese Encephalitis infections. Due to various limitations of the Nigerian public health system, co-infections are not accurately assessed, and outbreaks of arboviral diseases are poorly reported and recorded.

Aim: We aim to offer an evidence-based approach to questions concerning the high mortality rate reported in cases of Malaria, especially in children. These reviewed techniques used in diagnosing malaria, proving its crude nature as an aid to misdiagnosis of malaria for viral diseases that share overlapping symptoms. We described the different forms of interactions of arboviruses and Plasmodium in insect vectors, and indicated possible synergies. We analysed various sero-epidemiological models that could aid efficient diagnosis and proposed the best technique for adoption.

Methods: A review of previous studies on the most prevalent febrile diseases in West Africa, Nigeria was conducted by consulting literature from PubMed, Africa Journals Online, Google Scholar, and other databases to source studies within this niche in previous years. Relevant keywords such as mosquitoes, Plasmodium interaction, serological diagnosis, clinical signs of mosquitoes were used.

Result: The various publications consulted highlighted the possibilities and cases of malaria co-infection with several zoonotic arboviruses. There is good data to support the fact that arboviral infections have often been misdiagnosed as malaria and, in frequent cases, resulted in death reported as malaria mortality. Studies and findings on efficiently preventing misdiagnosis have been reported and discussed in various clinical trials, as presented in the reviewed articles.

Conclusion: The effective use of polymerase chain reactions (PCR, nested PCR, RT-PCR) as a serological model in malaria diagnosis is strongly recommended to completely exclude cases of arboviral infection in the diagnosis of malaria. In addition, adopting sero-epidemiological models will help forecast outbreaks of arboviral infections so that appropriate preventive measures are taken.

Keywords: Arbovirus; Malaria; Co-infection; RDT, PCV; Plasmodium; Mosquito; Dengue; Africa; Nigeria

Biography

Babatunde Ibrahim Olowu has his passion in the Immunovirology of arboviruses, being a victim of emotional havoc from misdiagnosis; He has structured a carrier of interest around diagnostics medicine. He is currently a part 4 medical student at the university of Ibadan, Nigeria, where is studies veterinary medicine. He is passionate on improving the health and wellbeing of Animals-Humans, and is a recipient of many award and laurels within and without university of Ibadan. Being concencious, he one day wishes he can integrate translational knowledge in Virology into building potential vaccines against common arboviruses that are endemic in Nigeria, Africa.

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