A Case Series of Unusual Presentations Associated with Arthropod Bites: Cutaneous, Cardiac, Articular and other manifestations

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Background: Arthropods are important vectors involved in disease transmission, envenomation and allergic reactions. Arthropod saliva contains a sophisticated arsenal of chemicals involved in envenomation, disease transmission and direct pharmacologic effects. We present a series of 15 unusual cases, misdiagnosed at the initial presentation. Clinicians have to be vigilant in areas infested with arthropods such as ticks, where presentations may mimic common diseases.

Methods & Materials: A series of unusual cases are described, including first report of Inducible Heart Block in Lyme Disease, three Cases of Lyme Psychosis, two cases of Babesiosis misdiagnosed as Left Pyelonephritis, a patient admitted with tick attached to the foot, Eschar associated lesions following bed bug bites, six cases with Unusual Presentations of Erythema Migrans(EM), Jarisch Herxheimer Reaction during therapy for “Babesiosis” and a patient with Lyme rash missed, sent home with therapy for “flu”.

Results: Second and third degree heart block was induced by exercise in a patient Strongly Lyme positive admitted with syncope x 2, and reversed to second and first degree block with cessation of exercise and recovered fully after ceftriaxone and doxycycline therapy. Three patients presented with 1. Mania 2. Hallucinations 3. Confusion and memory loss. All 3 recovered fully after antibiotics. Two older female patients were treated for left pyelonephritis for over a week with persistent fever. Babesia microti serology and thrombocytopenia and hyponatremia, associated with leukopenia, thrombocytopenia and hyponatremia, Eschar like lesion on neck, a rash mimicking “Poison ivy on breast”, a blistering lesion on foot and a rash that looked like scratch marks of mosquito bites. A patient with fever and body aches was sent home with the diagnosis “flu”, missed by 3 physicians, was later readmitted with EM and high fever.

Conclusion: In areas with high arthropod infestation, particularly ticks, clinicians have to be vigilant to avoid misdiagnosis of arthropod borne diseases and inappropriate treatment.

Metagenomic study of blood samples from bats, Uganda

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Background: The unique ecosystem of Uganda enables close interaction between humans and wildlife. This milieu creates a hot spot for emergence of infectious diseases. In the last decade bats were found to be a major reservoir of zoonotic pathogens and their proximity to humans provides direct or indirect conditions for spillover events.

Methods & Materials: Whole blood samples were collected from 4 different districts of Uganda (Bundibugyo, Buike, Kabong, Lamwo). RNA from six pools of blood, consisting of 9-26 individual bats, each representing specific location, was extracted by Purelink RNA kit (Invitrogen, Thermo Fischer Scientific) and were subjected to NGS of the transcriptome. Sequencing of RNA samples was performed by Illumina Hiseq 2500 with single 60 bp reads. The results were analyzed using de novo assembly with Velvet, followed by BLAST analysis. Based on these analyses, reads were re-aligned to known virus and Plasmodium genomes using Bowtie and normalized per library by correcting for sequencing depth.

Results: Plasmodium spp. represents between 0.56%-0.74% of total reads. The top 10 normalized read counts obtained, were from Plasmodium berghei, P. falciparum, P. yoelii, and P. chabaudi, at this order. The highest number of reads were related to P. berghei gene and was found in a pool consisting of mixed frugivorous and insectivorous bats at Buike district. The highest number of reads related to P. falciparum was obtained from the northern part of Uganda. Noteworthy, the reads of all 4 Plasmodium serotypes were abundantly found in all sampling sites.

Conclusion: Three species of Plasmodium primarily maintained in rodents and one species found in humans were found in four different ecosystems in Uganda. Two main points to be stressed include the ability to switch Plasmodium spp. between rodents and bats and the well tolerated and adapted immune responses of bats to newly introduced spp. No viruses have been found.

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