VIRAL RNA SHEDDING DURING ASYMPTOMATIC AND SYMPTOMATIC ZIKV MONO-INFECTION AND ZIKV/CHIKV CO-INFECTION IN BRAZILIAN CASES: IMPLICATIONS IN CLINICAL OUTCOMES.

Marta G. Cavalcanti¹, Mauro Jorge Cabral-Castro², Eduardo Scarlatelli Pimenta¹, Luis Roimicher³, Larissa S. Santana², Jorge L. S. Gonçalves², José Mauro Peralta²

¹Infectious Diseases Clinic, Hospital Clementino Fraga Filho, Federal University of Rio De Janeiro, Rio De Janeiro, Brazil, ²Department of Immunology, Instituto De Microbiologia Paulo De Góes, Federal University of Rio De Janeiro, Rio De Janeiro, Brazil, ³Rheumatology Clinic, Hospital Clementino Fraga Filho, Federal University of Rio De Janeiro, Rio De Janeiro, Brazil

ZIKV infection clinical presentations range from absence of symptoms or mild self-limited disease lasting one week in both general population and pregnant women. However, severe forms of disease like Guillain-Barré syndrome and microcephaly also present as manifestations of ZIKV infection. In the present, the most reliable tool to confirm ZIKV infection is RNA detection by molecular-assays. Zika virus RNA may be detected in serum for approximately 4-7 days following onset of symptoms but may be detected longer in a pregnant woman. Long periods of RNA shedding in blood, urine and saliva permit delayed diagnosis of infection, but its correlation with disease evolvement is not known. Also, the role of ZIKV co-infections remains unclear as a risk factor for the development of severe forms of the disease. In 37 out of 163 individuals attending a tertiary-care hospital (HUCFF/UFRJ, Rio de Janeiro, Brazil), RT-PCR for detection of ZIKV and CHIKV RNA were performed in serial samples of sera and whole blood and urine longitudinally collected. Also, synovial and cerebrospinal fluids and tissue-samples were tested when available. RT-PCR reactive samples underwent viral isolation. The group of 37 individuals included 19 female and 18 male (mean age of 46.3 ± 15.9 years old). Zika mono-infection (ZIKVMono), Chikungunya mono-infection (CHIKMono) and Co-infection (CoInf) were diagnosed in 8, 9 and 20 individuals, respectively. Duration of symptoms was 8.25 ± 1.09 days post onset (dpo) in ZIKVMono; 44.6 ± 40.6 dpo, in CHIKMono; and, 114 ± 64.8 dpo, in CoInf group. In one individual, ZIKV infection extended for 100 days without symptoms before full-blown disease post CHIKV infection (Total duration of symptoms: 105 dpo). Serum RNA shedding was prolonged in 13 individuals, being 1/13 (7.7%) ZIKVMono, 2/13 (15.4%) CHIKMono and 10/13 (76.9%) CoInf group. In persistent symptomatic infections, polyarthralgia, and/or arthritis appeared in 7/13 (54.8%) cases of ZIKV co-infection in addition to prolonged ZIKV RNA shedding in serum samples (mean duration:40.36 ± 30.8 dpo). Also, in three cases of ZIKV co-infection, exacerbation of symptoms associated with CHIKV RNA amplification in blood as well as the isolation of infective particles in other compartments like synovial fluid and cerebrospinal fluid occurred in 3 and 1 case, respectively. Results suggest that ZIKV co-infections might be associated with prolonged RNA shedding, extended duration of symptoms and higher morbidity.