

## ZIKA VIRUS CO-INFECTION AMONG HIV-INFECTED PREGNANT WOMEN IN A BRAZILIAN COHORT

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**Background:** Outbreaks of Zika (ZIKV), Chikungunya (CHIKV), and Dengue (DENV) infections have occurred in Brazil since 2015. ZIKV has been associated with severe neurological complications and Congenital Zika Syndrome. The effects of ZIKV infection among immunocompromised individuals, especially pregnant HIV-infected women, are of significant interest and concern. We evaluated the manifestations of ZIKV co-infection among HIV-infected, pregnant women enrolled in an ongoing cohort study in Brazil.

**Methods:** The study population for this analysis comprised HIV-infected pregnant women enrolled in an ongoing program for the prevention of mother-to-child transmission of HIV at the Hospital Federal dos Servidores do Estado in Rio de Janeiro. Beginning in January 2015, this population comprised two sub-groups: 1) asymptomatic; and 2) symptomatic (symptoms consistent with arboviral infection (ZIKV, DENV, or CHIKV). Symptomatic women were evaluated with plasma ZIKV (ChemBio), DENV (PanBio), and CHIKV (Euroimmun Medizinische Labordiagnostika AG) IgM and IgG assays, as well as ZIKV and CHIKV real-time polymerase chain reaction (RT-PCR) assays (national reference laboratory). When necessary, an “in house” neutralization test was performed to distinguish between ZIKV and DENV. The same tests (except CHIKV) were performed for asymptomatic women. Data were analyzed using Mann-Whitney and Fisher’s exact tests.

**Results:** Between January 2015 and May 2016, 220 HIV-infected pregnant women were enrolled in the program. The median maternal age (years) was 26 (range: 14-42). Of 219 women, the median CD4 count (cells/mm<sup>3</sup>) was 459 (33-1625). Positive assays were reported for 22 (ZIKV) and 193 (DENV) (16 without any positive assay). Of the 220 women, 196 were asymptomatic and 23 presented with fever, maculopapular rash, pruritus, anorexia, and/or myalgia. Among the asymptomatic women, 10 (5.1%) had positive ZIKV serology, with one delivered a microcephalic infant. Of the symptomatic women, 12 (52%) had positive ZIKV tests (RT-PCR: 5; serology: 7), of whom three delivered preterm infants (gestational ages (GAs) (completed weeks): 34; 36; 36) and three delivered infants with severe outcomes (1 fetal death at GA=20 with microcephaly and arthrogryposis, 2 with ventriculomegaly and brain calcifications (GA=40 and GA=37). Although the proportion of women with positive ZIKV assays who had severe fetal/infant outcomes [3/12 (25%)] was similar ( $p = 0.37$ ) to that of women with negative ZIKV assays [1/10 (10%)], symptomatic women [3/23 (12%)] were more likely than asymptomatic women [1/196 (0.5%)] to have severe pregnancy outcomes ( $p = 0.004$ ).

**Conclusions:** HIV-infected women who had ZIKV-like illnesses were more likely to have severe fetal/infant outcomes.