Investigating vertical transmission of chikungunya, dengue and Zika virus infection: a prospective observational cohort study of pregnant women and infants in Jamaica

C D Christie1, C Thorne2, J Anzinger3, H Bailey2, P Palmer1, O Morgan4,5, L Bryant4, S Mair1, R Pierre1, A Onyonyoro4,6, P Mitchell4,7, R Melbourne-Chambers1, K Webster-Kerr8, John Lindo3,8, R Lundin9, D Brown10, A Bispo10, E Nastouli2, C Giaquinto9,11

1Dept of Child and Adolescent Health, University of the West Indies (UWI), Kingston, Jamaica; 2University College London, UK; 3Dept of Microbiology, Division of Virology, UWI, Kingston, Jamaica; 4Dept of Obstetrics and Gynecology, UWI, Kingston, Jamaica; 5Victoria Jubilee Maternity Hospital, Kingston, Jamaica; 6Kingston and Spanish Town Hospital, St Catherine, Jamaica; 7Victoria Jubilee Maternity Hospital, Kingston, Jamaica; 8Ministry of Health, Epidemiology Unit, Jamaica, and UWI, Kingston, Jamaica; 9PENTAFoundation, Padua, Italy; 10Fundação Oswaldo Cruz, Rio de Janeiro, Brazil; 11University of Padua, Italy

Methods

- Dengue (DENV), chikungunya (CHKV) and Zika virus (ZIKV) outbreaks have occurred in Jamaica in recent years, where all three viruses now circulate endemicly
- The ZIKV outbreak in Jamaica peaked in June 2016.
- Many knowledge gaps remain with respect to ZIKV infection in pregnancy, including rate and risks of vertical transmission, pregnancy and birth outcomes and the natural history of congenital infection.
- The roles of re-infection and co-infection are also unclear

Purpose

To present preliminary results from this ongoing prospective cohort study of pregnant women and their infants in the Greater Kingston Metropolis of Jamaica, specifically:
- estimates of initial background sero-prevalence of DENV, CHKV and ZIKV infections
- preliminary results on incident infections (IgM results)
- pregnancy outcomes to date

Laboratory methods

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Results

Enrolments and follow-up

- By March 2018, 349 pregnant women enrolled
- Key characteristics in Table 1
- 187 had 2nd pregnancy visits, 56 had 3rd visits and nine had a 4th visit
- One symptomatic (headache and joint pains) subject, 3rd trimester

Preliminary serological results

- Almost all women had evidence of previous Dengue infection

Pregnancy outcomes to date

- Eight pregnancy losses (7 miscarriages, 1 ectopic pregnancy)
- 201 deliveries, with 204 newborns (three twin pairs)
- 200 live births, four (2%) were preterm
- Four still births and five neonatal deaths
- Placental abruption (two), preterm twins 28/40 with twin-twin transfusion (one), preterm (one), perinatal asphyxia APOGAR 1-1-3 (one)
- Perinatal mortality rate was 44.1/1000 live births.
- Four (2%) live newborns were microcephalic (WHO criteria)

Conclusions

- These initial results provide important preliminary data on the background sero-prevalence of ZIKV, CHKV and DENV in our cohort of pregnant women in Jamaica.
- Although some laboratory results are pending, the few incident infections are consistent with our clinical and national arbovirus surveillance data, with breakthrough endemic arbovirus infections now being identified.