2803. Is Maternal Plasma Zika Virus Load Associated with Birth Outcomes and Maternal Disease Severity?
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Background: Adverse fetal outcomes and infant birth defects may develop following Zika virus (ZIKV) infection during pregnancy, especially if this occurs in the first trimester. The aim of this study was to assess the relationship between plasma ZIKV load at the time of acute symptoms and (1) the rate and severity of birth defects in neonates born to mothers who had presented with ZIKV infection during pregnancy, and (2) clinical severity of maternal ZIKV infection.
Methods: Within a cohort of pregnant women living in the French territories in the Americas and exposed to ZIKV during the 2016 outbreak, we analyzed the data of women who developed a symptomatic infection confirmed by a positive plasma ZIKV RT-PCR, using the RealStar Zika virus RT-PCR Kit (Altona Diagnostics, Hamburg, Germany). Plasma ZIKV load quantification was based on the number of cycle times (CT) at which ZIKV RNA was detected (lower CT indicating a higher viral load). Variables indicating clinical severity of infection included the number of symptoms experienced and the severity of rash. Birth defects possibly linked to ZIKV infection were defined as microcephaly, brain imaging abnormalities, and central nervous system dysfunction. We also defined variable logistic outcomes associated with first symptom onset to examine whether potentially ZIKV-related abnormalities were linked to changes in CT, and multivariable linear regression was used to identify clinical correlates with CT value.
Results: Of the 277 live-born neonates who were born to mothers who met the selection criteria (n = 1024, 27% of pregnant women in whom an acute ZIKV infection was identified during pregnancy), 63% of women had detectable ZIKV RNA load at the time of acute symptoms and (1) had CT < 37.1, indicating a lower CT spike is suggestive of a higher viral load. The CT value was significantly lower in women with at least one birth defect (P = 0.004). Microcephaly was the most common microcephaly (80.6%), brain imaging abnormalities (85.7%), and central nervous system dysfunction (53.3%).
Conclusion: No relationship was observed between plasma ZIKV load and abnormal pregnancy outcomes but higher plasma ZIKV load was associated with a more linear regression was used to identify clinical correlates with CT value.

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2804. Systematic Review of the Role of Prenatal Ultrasound and Amniocentesis in the Diagnosis and Evaluation of Congenital Zika Syndrome
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Background: To inform recommendations for optimal screening for fetal outcomes of ZIKV infection during pregnancy, we examined the relationship between prenatal diagnostics (ultrasound examination and amniotic fluid ZIKV virus testing) and postnatal congenital ZIKV syndrome (CZS) abnormalities.
Methods: Systematic searches were performed in 27 medical and public health databases from inception to March 21, 2018 for articles with the keywords “Zika,” “pregnancy,” “ultrasound,” and “amniocentesis.” A total of 2,281 unique records were identified. Two reviewers independently assessed titles, abstracts, and full texts for content and relevance. Together, the 61 included articles describe 307 mother–fetus/infant dyads; 291 were included in the systematic review of prenatal ultrasound and ZIKV virus, and 38 were included in the systematic review of amniocentesis and Zika virus.
Results: There were 155 fetuses with CZS findings on prenatal ultrasound examination (53.3%); among them, postnatal CZS abnormalities were reported for 114 (73.5%). High proportions of microcephaly (72.4%); cerebral atrophy (85.7%), and ventriculomegaly (80.6%) were confirmed at pregnancy completion. In addition, 28.0% of the 136 fetuses without any CZS findings on prenatal ultrasound had CZS abnormalities identified at pregnancy completion. Structural CZS abnormalities were identified in 13% of appropriate gestational age deliveries. Pregnancy completion in dyads with and without Zika virus RNA detected in one or more amniotic fluid specimens (53.8% and 38.3%). In 6 pregnancies, Zika virus RNA was detected in amniotic fluid, but no Zika virus RNA was detected in a subsequent amniocentesis specimen.
Conclusion: Prenatal ultrasound cannot detect structural findings associated with ZIKV infection as ultrasound may vary with factors such as timing of infection, timing of ultrasound, technical expertise, and severity of abnormalities. Detection of Zika virus RNA in amniotic fluid did not predict the risk for CZS abnormalities in this review, and deCazeau of Zika virus RNA from amniotic fluid is possible after maternal acute infection. The decision to perform diagnostic testing for Zika remains a shared decision between patients and clinicians, and more data are needed to define clinical predictors that will inform these decisions.
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2805. Kinetics of Anti-Zika Virus (ZIKV) Antibodies after Acute Infection in Pregnant Women
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Background: The kinetics and specificity of anti-ZIKV antibodies after acute ZIKV infection is not well known, especially in areas where different flaviviruses circulate. The objective of this study was to describe the kinetics of anti-ZIKV antibodies in pregnant women in whom an acute ZIKV infection was identified during pregnancy.
Methods: Within a cohort of pregnant women living in Guadeloupe and exposed to ZIKV during the 2016 outbreak, we identified 65 women who presented with an acute, symptomatic PCR-confirmed ZIKV infection at various times of their pregnancy, with a known date of first ZIKV symptom. Anti-ZIKV neutralizing antibodies (using a Virus Neutralisation Test (VNT)) and anti-ZIKV NS1 antibodies (using IgM and IgG ELISA Euroimmun® kits) were searched for on four serum samples obtained from blood drawn at the time of delivery in all women and at various times between acute infection and delivery in 23 women.
Results: In 101 (16% of all national confirmed perinatal ZIKV infections), 2018 data of CR reported 272 women with confirmed ZIKV infection during pregnancy. Even though neurological sequela are described in PI, including microcephaly, affected patients can develop symptoms within months after birth with development, language, and behavior alterations.
Conclusion: After acute ZIKV infection, IgG antibodies developed and remained detectable until delivery by a commercially available ELISA assay in all women tested. These data provide evidence of concomitantly positive VNT results. From these findings, the absence of ZIKV antibodies at delivery would strongly indicate the absence of infection during pregnancy.
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2806. Follow-up of Children with Confirmed Perinatal Zika Virus Exposure: The First 2-year experience in the Costa Rican Tertiary Pediatric Hospital
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Background: Costa Rica (CR) has local transmission of Zika Virus (ZIKV) infection since February 2016. Perinatal exposure (PE) and infection (PI) cases have been documented. Following a national protocol, reporting and follow-up of patients is mandatory. 2018 data of CR reported 272 women with confirmed ZIKV infection during pregnancy. Even though neurological sequela are described in PI, including microcephaly, affected patients can develop symptoms within months after birth with development, language, and behavior alterations.
Methods: Retrospective descriptive study of patients born from August 1, 2016 until July 31, 2018, with laboratory confirmed PE. Follow-up was performed at referral hospital.
Results: 101 patients were enrolled (37% of all national confirmed perinatal ZIKV exposure during study period). Median age of first evaluation was 5 months (range: 0.6-21). 86/101 (86%) were classified as adequate term infants. 34/101 (33.7%) mothers got infected at first trimester, 55 (54.4%) at second, and 11 (10.8%) at third trimester. No data available in one. 8/101 (8%) patients had microcephaly at birth, with only 3/101 (3%) with persistence at follow-up, and 3/101 (3%) developed it later (after 9 months). 3/101 (3%) had confirmed congenital CZS syndrome (laboratory confirmation in asymptomatic children), and 2 (2%) congenital ZIKV infection (laboratory confirmation in asymptomatic children). 6/101 (6%) had tone abnormalities and global development delay. 9 (9%) had central nervous system (CNS) ultrasound abnormalities, and 3 (3%) developed seizures. 2 (2%) had visual abnormalities, 1 (1%) had hearing impairment, 4 (4%) developed eating abnormalities, 6 (6%) developed language delay, and 4 (4%) had hyperactive behavior. All findings were divided according to maternal trimester of infection.
Conclusion: PI is a health problem in CR. Microcephaly at in frequent, with inter national data showing it affects less than 1% of newborns. Most motor and development delay were observed in early infants in patients infected early during pregnancy, but specific language and behavior abnormalities also affected patients with later PE. Mortality was not documented, but significant CNS abnormalities were evident in congenital ZIKV syndrome patients.
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