ZIKA VIRUS AND PREGNANCY

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ABSTRACT
Introduction: Zika virus infection (ZIKV) has emerged as a significant threat for the health of pregnant women and newborns in populations living or visiting Latin America since the epidemic begun in 2015. Reported possible consequences included particularly the risk of associated microcephaly, still to be proved in detail and confirmed, but potentially of other congenital defects. **Methods:** The method used a database journals in PubMed, ProQuest and Medline used the keywords, after the data obtained was reviewed journal research was conducted. Search result found 22 journal but in accordanced with the topic was 8 journal with a span of February-March 2016. **Result:** 1). Provide further support for a link between maternal ZIKV infection and fetal and placental abnormalities that is not unlike that of other viruses that are known to cause congenital infections characterized by intrauterine growth restriction and placental insufficiency. 2). women with a positive ZIKV RT-PCR or with cocerning findings on USS should be referred to a fetal medicine service for evaluation and follow up. 3). Although there are several barriers for developing vaccines and other measures for pregnant women, these barriers are surmountable with concerted efforts and leadership. **Discussion:** 1). Women with suspected or confirmed ZIKV infection should be monitored closely, with serial ultrasonography to evaluate for signs of placental insufficiency, given the risks of fetal death and intrauterine growth restriction. 2). All pregnant women who have potentially ben exposed to ZIKV should be revered to their local maternity unit for 4-weekly fetal ultrasound scan (USS) examinations. 3). No specific antiviral treatment is available for zika virus disease.

Key words : *zika virus, pregnancy*

INTRODUCTION

Pregnancy is a physiologically dynamic state. The immune profile of a pregnant woman is responsive to the changing levels of sex hormones and evolves through the course of pregnancy.─However, most of the current knowledge base for vaccine response is derived from observational studies conducted in the latter part of pregnancy, with limited data available from the first and early second trimester or from randomized clinical trials. On the other hand, clinical, practical, and public health considerations require that vaccine use not be restricted to women with advanced gestational age. Given that a substantial portion of Zika's teratogenic effects may occur in the earlier phase of pregnancy, administration of any forthcoming Zika vaccine will be most beneficial prior to or during the early parts of pregnancy. The knowledge gap for early pregnancy vaccine responses and safety will make the task of developing and recommending an effective Zika vaccine for use across pregnancy challenging. Infection with Zika virus in pregnancy is associated with arange off etalabnormalities, including fetal death and growth restriction in addition to neonatal microcephaly.

The current epidemic of ZIKV infection began in early 2015 in northeastern Brazil. Since then ZIKV transmission has been confirmed in 35 countries.4 One theory is that ZIKV was carried to Brazil by infected Pacific Islanders visiting an international canoeing event in Rio de Janeiro in August 2014. In September 2015 clinicians working in Pernambuco state noticed an increase in newborn babies with microcephaly. The Ministry of Health quickly established a register and within 3 months recorded 4180 suspected

cases, including 68 deaths, compared to a total of 147 reports in the whole of 2014.5 A review of the first 35 cases noted that 74% of mothers reported a rash during pregnancy and 71% of infants had severe microcephaly.6 ZIKV RNA was detected in the amniotic fluid of two mothers and from the brain of a baby who died shortly after birth.7 Taken together these data indicate a strong association between ZIKV infection during pregnancy and microcephaly, although a causal relationship is yet to be proven. ZIKV infection has an incubation period of 3–12 days. Patients may present with a fever, rash, arthralgia, and conjunctivitis. The illness is self-limiting and lasts for up to a week. Severe cases are uncommon.

It can be difficult to distinguish ZIKV infection from other viral illnesses such as dengue and chikungunya, which are also transmitted by Aedes mosquitoes. Population seroprevalence studies from the outbreak in Micronesia showed that 80% of ZIKV infections were asymptomatic,8 which presents a diagnostic problem in pregnancy if ZIKV crosses the placenta.

METHODOLOGY

The method used a database journals in PubMed, ProQuest and Medline used the keywords, after the data obtained was reviewed journal research was conducted. Search result found 22 journal but in accordanced with the topic was 8 journal with a span of February-March 2016. Keywords used were zika virus and pregnant. Fulltext articles and abstracts were reviewed to choose studies that fit the criteria. Criteria for inclusion in this review was zika virus and pregnant women. Keyword search using the above get 22 article, but the article in accordance with article 8 inclusion criteria. The article was used as a further samples are identified and presented in table 1.

DISCUSSION

Zika virus is a flavivirus transmitted by Aedes (Stegomyia) species of mosquitoes. In May 2015, the World Health Organization confirmed the first local transmission of Zika virus in the Americas in Brazil. The virus has spread rapidly to other countries in the Americas; as of January 29, 2016, local transmission has been detected in at least 22 countries or territories, including the Commonwealth of Puerto Rico and the U.S. Virgin Islands. Zika virus can infect pregnant women in all three trimesters. Although pregnant women do not appear to be more susceptible to or more severely affected by Zika virus infection, maternal–fetal transmission has been documented. Several pieces of evidence suggest that maternal Zika virus infection is associated with adverse neonatal outcomes, most notably microcephaly. Because of the number of countries and territories with local Zika virus transmission, it is likely that obstetric health care providers will care for pregnant women who live in or have traveled to an area of local Zika virus transmission. We review information on Zika virus, its clinical presentation, modes of transmission, laboratory testing, effects during pregnancy, and methods of prevention to assist obstetric health care providers in caring for pregnant women considering travel or with a history of travel to areas with ongoing Zika virus transmission and pregnant women residing in areas with ongoing Zika virus transmission.

Although the most common mode of transmission of Zika virus to humans is from the bite of an infected mosquito, other modes of transmission have been documented, including maternal–fetal transmission. Transmission through blood transfusion and laboratory exposure also have been reported. Three cases of probable sexual transmission of Zika virus have been reported. The length of time that Zika virus remains in semen is unknown. Zika virus RNA has been identified in breast milk, but attempts to culture the virus were unsuccessful. Transmission through organ or tissue transplantation is theoretically possible, but has not been documented. Zika virus testing can be performed to detect the presence of viral RNA, antigen, or antibodies. Reverse transcription-polymerase chain reaction (RT-PCR) has been validated, and its performance has been evaluated in individuals with symptoms consistent with Zika virus disease. Reverse transcription-polymerase chain reaction testing to detect Zika virus RNA can be performed on serum, amniotic fluid, and other fluids, as well as tissues. Reverse transcription-polymerase chain reaction testing of serum is recommended within approximately 1 week of symptom onset. Viral clearance can occur within 7 days of symptom onset; thus, a negative RT-PCR result on a test performed 5–7 days after symptom onset may not exclude Zika virus infection. Immunohistochemical staining also can be used

to detect Zika virus antigen in tissues, including within placental tissues. Serologic testing can detect immunoglobulin M (IgM) by enzyme-linked immunosorbent assay as early as 4 days after illness onset19; however, a negative result on serum collected less than 7 days after illness onset does not exclude Zika virus disease. In addition, a positive IgM result can be difficult to interpret; cross-reaction due to previous flavivirus exposure, including vaccination (eg, yellow fever vaccine) and infections (eg, dengue virus), can occur. Zika virus IgM levels may be elevated as a result of this cross-reaction. Plaque-reduction neutralization testing can be performed to measure virus-specific neutralizing antibodies to Zika virus and other flaviviruses.

The levels of neutralizing antibodies can be compared between flaviviruses, but these tests may be difficult to interpret in individuals previously infected or vaccinated against flaviviruses. Health care providers are encouraged to work with their health departments to facilitate interpretation of Zika virus tests. As of February 12, 2016, commercial tests for Zika virus are not available. Zika virus IgM and plaque-reduction neutralization testing is performed only at CDC and a limited number of state and local health departments. Health care providers should contact their state or territorial health department for assistance with arranging testing and interpreting results. As an arboviral disease, Zika virus disease is a nationally notifiable condition and laboratory confirmed cases should be reported to the state, territorial, or local health department.

Zika virus infection during pregnancy and effects on the fetus. Data on pregnant women infected with Zika virus are limited. Pregnant women can be infected with Zika virus in any trimester, and symptoms reported during pregnancy are similar to those in nonpregnant individuals. No evidence exists to suggest that pregnant women are more susceptible to Zika virus infection or are more severely affected once infected. Maternal–fetal transmission of Zika virus has been demonstrated throughout pregnancy. The full spectrum of outcomes that might be associated with congenital Zika virus infection is unknown; however, microcephaly, brain atrophy, ventricular enlargement, and intracranial calcifications have been reported in neonates who have tested positive for Zika virus infection. Ocular defects, scalp rugae, and joint contractures also have been reported in cases of suspected congenital Zika virus infection (ie, neonates with microcephaly for whom Zika virus testing had not been performed). In addition to the association with brain abnormalities in neonates, Zika virus RNA has been detected in the pathologic tissue specimens of fetal losses; however, it is unknown whether Zika virus caused the fetal loss.

The frequency of maternal–fetal transmission and the risk that a fetus infected with Zika virus will develop microcephaly or other congenital defects are unknown. It is also unknown whether the timing or severity of symptoms, viral load, maternal immune response, or other factors increase the risk of mother–fetal transmission or of the occurrence of abnormalities.

RESULT

No	Title	Author/year	Design	Population and Sample	Intervention	Controll	Random	Outcome	Result
1	Diagnosis, management and follow up of pregnant women with zika virus infection: Apreliminary report of the ZIKERNCOL cohort study on Sincelejo, Colombia	Wilmer E, Villamil-Gomez. 2016	Retrospective	Pregnant women in endemic area	RT-PCR	No	No	Pregnancy outcomes	28 pregnant women with confirmed by RT-PCR ZIKV under follow up

No	Title	Author/year	Design	Population and Sample	Intervention	Controll	Random	Outcome	Result
2	Pregnancy in the Time of Zika addressing barries for developing vaccines and other measures for pregnant women	Saad B.Omer, Richard H.Beigigi. 2016	Randomized clinical trials	Pregnant women from the first and early second trimester	Zika vaccine	No	No	Pregnant women	There are several barriers for developing vaccines and other measures for pregnant women
3	Zika virus and pregnancy, what obstetric health care prviders need to know	Dana Meaney-Delman, Sonja A.R, J.Erin Staples,et all. 2016	Review information on zika virus	Pregnant women	CDC	No	No	Pregnant women	To assist health care providers who care for pregnant travelers to and residents of areas of zika virus transmission
4	Zika infection in pregnancy is linked to range of fetal abnormalities, data indicate	Susan Mayor. 2016	Collecting clinical and ultrasound scan data	Pregnant women	Tested blood and urine specimens in pregnant women	No	No	Pregnant women	Women with zika infection who underwent ultrasonogrphy in pregnancy have delivered their babies, and he researchers said that the ultrasonograpic findings were confirmed
5	Zika virus infection during pregnancy:what, where, and why?	Rachel M.Burke, Pranav Pandya, Eleni Nastouli, et all. 2016	Review article	Pregnant women	RT-PCR, EDTA plasma and urine sample from symptomatic patients	No	No	Pregnant women	Pregnant women should consider avoiding travel to areas with ongoing ZIKV outbreaks and seek advice from atravel health specialist
6	Increase in reported prevalence of microcephaly in infants born to women living in areas with confirmed	Wanderson Kleber, Juan Cortez, Wanessa Tenorio, et all. 2016	Morbidity and mortality report	The first trimester of pregnancy	RT-PCR in amniotic fluid samples	No	No	Pregnant women	Pregnant women should protect themselves from mosquito bites by wearing

No	Title	Author/year	Design	Population and Sample	Intervention	Controll	Random	Outcome	Result
	zika virus transmission during the first trimester of pregnancy								long sleeves and long pants, applying insect repellent and when spending time indoors ensure that rooms are protectec by screens or mosquito nets
7	Zika virus infection in pregnant women in Rio de Janeiro-Preliminary report	Patricia Brasil, Jose P.Pereira, Claudia Raja Gabaglia, et all. 2016	Cohort study	Pregnant women at any week of gestation	Testing used serum and urine spesimens, RT-PCR, ultrasonography	No	No	Pregnant women	A further support for a link between maternal ZIKV infection and fetal and placental abnormalities that is not unlike that of other viruses that are known to cause congenital infection charaterized by intrauterin growth restriction and palcental insufficiency.
8	Zika virus nd pregnancy: A review of the literature and clinical considerations (Podcast)	Caroline Mars, Gayle Olson, George Saade, et all. 2016	Review and synthesize the current literature regarding ZIKV	Pregnant women	RT-PCR, ultrasonography, amniocentensis	No	No	Pregnant women	Case report support intauterine transmission and an assiciation between maternal ZIKV infection and fetal microcephaly and calcifications

CONCLUSION AND RECOMMENDATION

Provide further support for a link between maternal ZIKV infection and fetal and placental abnormalities that is not unlike that of other viruses that are known to cause congenital infections characterized by intrauterine growth restriction and placental insufficiency. Women with a positive ZIKV RT-PCR or with cocerning findings on USS should be referred to a fetal medicine service for evaluation and follow up. Although there are several barriers for developing vaccines and other measures for pregnant women, these barriers are surmountable with concerted efforts and leadership. All pregnant women who have potentially ben exposed to ZIKV should be revered to their local maternity unit for 4-weekly fetal ultrasound scan (USS) examinations. To assist health care providers who care for pregnant travellers to and residents of area zika virus transmission, CDC, has develop interim clinical guidance.

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