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TOP

Congenital Infection by Zika Virus: Assessing and monitoring infants

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The following recommendations have been provided after the consensus among experts from the Center for Disease Control and Prevention (CDC) in the United States for the diagnosis and management of congenital infection by Zika virus. The recommendations are based on the available evidence, and five main issues are addressed:

1. Infection by Zika virus.
2. Updates on laboratory research and assessing neonates with probable congenital infection by Zika.
3. Monitoring patients with laboratory evidence of Zika infection and abnormalities compatible with congenital Zika syndrome.
4. Monitoring patients with laboratory evidence of infection Zika infection and abnormalities compatible with congenital Zika syndrome upon birth.

Infection by Zika virus

In August 2016, the CDC issued a guide to instruct health care professionals on the management of infants with probable congenital infection by Zika virus. This applies to children whose mothers had a proven infection in pregnancy or to infants with suggestive clinical and/or neuroimaging abnormalities associated with a consistent maternal epidemiological history.

The clinical presentation of congenital Zika syndrome (CZS) is quite varied and is largely based on cerebral and ophthalmologic abnormalties. The virus appears to affect neural progenitor cells, causing cell death and altering cell proliferation, migration, and differentiation. This process delays or stops brain growth and affect the brain's viability through consequences such as neuronal migration disorders and optic nerve abnormalities. The patient may experience seizures, muscle tone abnormalities, hyperreflexia, spasticity, irritability, microcephaly, craniofacial disproportion, excess skin folds on the scalp, visual and hearing impairments, and other disorders such as congenital clubfoot and arthrogryposis.

Updates on laboratory research and assessing neonates with probable congenital infection by Zika

In cases of suspected Zika infection, confirmation is achieved through laboratory tests and, more specifically, through the detection of RNA by reverse transcription polymerase chain reaction (RT-PCR) of the Zika virus and/or IgM serology using ELISA.

The diagnosis of congenital infection in newborns is confirmed by an RT-PCR that is positive for Zika in the plasma, urine, or cerebrospinal fluid sample. The diagnosis will be of probable infection if the serum or cerebrospinal fluid is positive for IgM and if the RT-PCR is negative.As for serology options, the plaque reduction neutralization test (PRNT) may be performed to confirm the specificity of IgM antibodies against the Zika virus and rule out false positive IgM results for other arboviruses.

PRNT is indicated when the child's initial test is IgM positive and the test was not performed on a maternal sample. However, because PRNT does not distinguish between maternal and child infection, the child must be tested again and the diagnosis must be confirmed after 18 months of life. If IgM and PCR are negative in the child and there are no other infections PRNT should be performed for confirmation. If the result is negative, a pre- or post-natal infection is presumed.

The care of exposed newborns, even if asymptomatic, should be systematized and should include family support. Patients with clinical abnormalities that are consistent with

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CZS and who exhibit laboratory evidence of infection should undergo an ophthalmological exam, an auditory assessment, laboratory testing (complete blood count and metabolic panel that includes liver function), and neuroimaging scans. It is important to rule out other causes of microcephaly and intracranial calcifications, including genetic syndromes and other systemic infections.

At birth, these children should receive a thorough physical examination to determine head circumference, weight, length, and gestational age, as well as the presence of neurological abnormalities or dysmorphic features. The use of transfontanellar ultrasound (TFUS) is recommended, even if prenatal ultrasounds have not shown any abnormalities. A brainstem auditory evoked response (BAER) hearing assessment should also be performed before the patient is discharged, and an ophthalmological evaluation should be performed in the first month of life.

Monitoring patients with laboratory evidence of Zika infection and abnormalities compatible with congenital Zika syndrome

Children with congenital Zika syndrome should be monitored by a multidisciplinary team, and counseling should begin during pregnancy. Families should receive psychological support and guidance on the child's development, feeding, growth, and prognosis.

It is of utmost importance that patients be referred to specialists such as a neurologist (in the presence of any abnormalities), an ophthalmologist during the first month of life (however, visual acuity should be tested and visual abnormalities should be assessed at all visits to the pediatrician), and an otolaryngologist (the BAER hearing assessment should be performed before the first month of life and, if the results are normal, the test should be repeated between the fourth and sixth month of life).

Children with abnormal brain development are at risk of developing hypothalamic dysfunction, and thyroid function should be assessed in the second week of life and at 3 months of age.

Monitoring patients with laboratory evidence of Zika infection and without abnormalities compatible with congenital Zika syndrome at birth

Children without early abnormalities should also be monitored, because there is risk of progression with late sequelae such as seizures, hearing loss, and vision loss.

Given the implications of congenital Zika syndrome and despite limited access to health services, it is important to advocate the follow up by a specialized and multidisciplinary team that includes speech therapists, occupational therapists, physiotherapists, psychologists, neurologists, ophthalmologists, and pediatricians in order to improve the families' involvement and understanding and to provide the child with stimulation.

Update: Interim Guidance for the Evaluation and Management of Infants with Possible Congenital Zika Virus Infection - United States, August 2016

Russel K, Oliver SE, Lewis L, Barfield WD, Cragan J, Delman-Meaney D, et al. Update: Interim Guidance for the Evaluation and Management of Infants with Possible Congenital Zika Virus Infection - United States, August 2016. MMWR Morb Mortal Wkly Rep. 2016;65(33):870–878